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JOURNAL

OF THE

CEYLON BRANCH

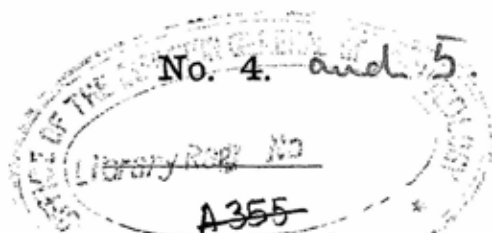
OF THE

ROYAL ASIATIC SOCIETY,

1848.

24868

VOLUME II.—PART I.



"The design of the Society is to institute, and promote inquiries into the History, Religion, Literature, Arts, and Social Condition of the present and former Inhabitants of the Island, with its Geology, Mineralogy, its Climate and Meteorology, its Botany and Zoology."

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ERRATUM.

☞ In head-lines to Journal, Volume II., Nos. 4 and 5, omit "Part I."
and "Part II."

ROYAL ASIATIC SOCIETY.

CEYLON BRANCH.

ON THE FORMATION OF A COLLECTION OF LEPIDOPTERA IN CEYLON.

BY EDGAR L. LAYARD, Esq.

(*Read 3rd June, 1848.*)

THE small progress which has hitherto been made towards a knowledge of the Natural History of the Island, and the total absence of all public and private collections, contrasted with the rich and extensive field which the country affords to the Naturalist, induce me to offer to the Society a few hints on the formation of a collection of Lepidoptera.

The caterpillars, or larvæ, of butterflies and moths, (or more scientifically speaking, of Diurnal and Nocturnal Lepidoptera,) may be sought for on almost every plant and shrub met in our daily walks. Morning and evening, in a tropical country, are their feeding times, and they may then be found making good use of their powerful jaws, clinging to the underside or edges of the leaves. During the heat of the day they conceal themselves in the thickest and shadiest parts of the plant, and remain perfectly motionless, till hunger and the cool breezes of evening again summon them to their pleasing labours. Some species, such as many of the grass-feeding *Noctua*, feed only at night, and must then be carefully sought with a lantern ;

though some may occasionally be found by pulling up tufts of grass, and examining the roots among which they lie concealed. Some of the internal feeders upon the wood and pith of trees, &c., are also active during the night, lengthening their covered galleries, which are formed from the digested particles of their food. The best means of capturing these is to watch the covered way (which may sometimes be seen of several inches in length hanging down the trunk of a tree), and, on ascertaining which is the end attached to the hole in the wood, suddenly to press the finger over it, thus stopping the return of the inmate, who is capable of a swift retrograde movement and can progress either way with astonishing speed. On lifting the web, if the larvæ is not visible, rest assured he is inside the stem far out of reach. These internal feeders are most difficult to rear, the sûrest method being to fasten a piece of strong gauze in the shape of a bag over the aperture, and watch the natural egress of the moth. The watcher's patience, however, may perhaps be tried, as several of these species are three or four years in the larvæ and pupa (chrysalis) state. Nevertheless, as it is most probable that the discovery of the larvæ is owing to the large size of its web, it will be nearly full-grown.

Some species, again, are gregarious feeders. Some of these envelopè themselves in a large mass of leaves and silk, and as they consume the foliage around them keep adding fresh materials to their domicile. Others march out in order in a wedge shape, stripping the leafy covering of the trees most completely, leaving them almost, if not entirely, bare. These larvæ are termed "processionary caterpillars." Most of the gregarious feeders are very common, and are easily found. Some of them shed their hair when handled, which, entering the uncovered skin of the face and hands, causes extreme and long irritation.

Others, again, such as some of the *Limacodes*, actually sting, their spines being sharp and furnished with a very pungent acid.

These larvæ are shaped somewhat like the common "wood-louse" (*Oniscus*) with the head and feet hidden. They spin themselves little round or oblong hard cocoons, in which they undergo their transformations; and the perfect fly on emerging pushes open a little trap door, hitherto fastened by means of a natural gum, which is now melted by a strong acid secreted by the moth. All insects which spin cocoons are furnished with the abovenamed fluid, with the exception perhaps of some of the *Saturnia* tribe, which do not close the ends of the cocoon, but spin thick hairs over them in the shape of an "eel pot."

As my object in writing is the advancement of science and to assist those who desire to collect for the purpose of investigating the habits and peculiarities of insects, I would direct the reader's attention to the advantage, in the rearing of larvæ, of ascertaining the moth or butterfly to which each belongs. To effect this, several gauze cages should be made for the purpose of separating the larvæ. The reason of this is obvious. The larvæ of many *Noctua* descend into the earth to effect their final change, and the pupæ being of one uniform shape and colour, it is impossible to distinguish between them; and if all be put in the same case, they, by coming out together, make "confusion worse confounded." Let each caterpillar have, if possible, its own cage; let it be numbered and sketched; write down the name of the plant on which it feeds, with the dates of its entering into and emerging from the pupa state. These notes will not occupy much time, and, if not valuable to the observer, may, if properly and carefully kept, be of great service to a scientific man.

Butterflies and the larger moths and *Sphingidæ* require a large roomy box to expand their wings in on first emerging; they also require to creep with facility up the sides of the cage, that their bodies and wings, by hanging down, may stretch and harden. The very act of creeping upwards forces the fluids from the body (which may be seen alternately contracting and

expanding) into the nervures of the wings. The common large *Saturnia*, feeding on cinnamon, requires six or eight hours to harden it for flight.

The bottom of the breeding cage should be furnished with a zinc tray about three inches deep—zinc, as it does not corrode, is preferable to iron or tin; fine earth and rotten wood, well mixed together, should be laid in the tray, and over this a layer of damp moss. Into the moist earth a branch of the larva's food should be stuck to keep fresh; the oftener the leaf is changed the better; once a day at least is absolutely necessary to obtain fine full-grown specimens. Light and air also are required. The cages are best swung from the ceiling by a pulley, to facilitate the drawing up and down; they are thus secure from ants and rats and children's fingers; native servants also are too fond of meddling. Larvæ may be collected from shrubs and trees by placing a sheet or table cloth under the branches, and beating them with a long stick. An umbrella with a hooked handle makes a good portable substitute, and is otherwise useful. This plan however of beating for caterpillars is attended with much inconvenience in this country from the showers of ants which fall from each blow. Some larvæ form themselves moveable domiciles, which they never quit, except in the winged state. These tribes consist of *Oiketicus*, *Cryptothelea*, *Psyche*, and the numerous *Tinæ*; these latter are more familiarly known by the name of "clothes' moths." The first fabricate their dwellings of pieces of stick laid lengthways, and as they increase in size they open one side of their habitaculum between two bits of stick, and let in another of proper size and length, which by means of their strong jaws they detach from the plant on which they are feeding. The second tribe are smaller and more delicate, using in the fabrication of their dwellings small pieces of leaves and the cast skin of their own heads. The third, more delicate still, simply weave their own silk. These three species are the most remarkable in their natural

economy. The female is perfectly wingless (apterous), never quitting the case in which she has passed her two previous stages of existence. The larvæ of both sexes, when about to undergo their final change, fix themselves by the apex to a twig or leaf, and when the male emerges from his living tomb the female has changed to a pulpy maggot, wholly differing from the swiftly flying male. Impregnation takes place within the case, and the female dies, becoming a mass of fine downy silk, and eggs. The young larvæ are excluded from the eggs, and immediately form their cases from the substance of their dead mother; then dropping by hundreds from the empty case they each eagerly seek a tender leaf, and commence their great work of existence—eating, changing, and reproducing. Twelve species of these have been found in Ceylon. The *Tinæ* are unluckily too well known, and dreaded, to need any particular mention, except that the insect collector, if not attending strictly to the directions hereafter laid down for preserving his specimens, will find he has made a fine collection of these species to the loss of all his others.

Care must be taken never to disturb a caterpillar that is stationary—in fact, larvæ should never be handled if possible; they may always be captured by gathering the leaf on which they are found. A stationary larvæ is most likely undergoing his “moult” or change of skin. This change occurs several times in his life, and a slight squeeze would at such a period probably prove fatal. If injured at the last change to a chrysalis, a deformed fly will be the result. The caterpillar of a fine unique moth (*Ptoactoria*) that I transmitted to Colombo by post from Chilaw, received a bruise, and one of its inferior wings is perfectly white and clear with no scales upon it.

In this country I have observed the final change is not so visible in its approach as in England. There, the larvæ often neglects his food for several days, is restless, and sickly; here, he eats till the last moment, and the only sign (and that not

always apparent) is the digested particles of food, instead of being as usual disposed in beautiful and regular forms, are humid and flaccid.

Of the pupa, little can be said as to collecting them; they may be found in all situations. The most likely places are behind the loose bark, and in crevices of trees, about their roots, in holes in old walls, and among dead leaves, &c. The pupæ of butterflies are usually attached to, or suspended from, or near, the plant on which they feed. It may not perhaps be out of place to mention here that European collectors have a method of capturing the perfect fly which is termed "sembling." This consists in exposing a virgin female of some of the large moths in a small cage in the open air; the males of the same species will surround her prison house, and are so intent upon their amorous chase that they may easily be captured by the hand. By this means some of the rarest moths are taken. Exposing an old sugar cask or basket smeared with honey, is also a good plan; and I have taken a fine yellow underwing (*Triphaena*) in the toddy vessels and only there. A bright light at night near an open window attracts many insects not otherwise found.

Rearing Lepidoptera from the larvæ and pupæ is doubtless the best way to obtain fine and perfect insects, and consequently a more valuable collection; but all insects cannot be found in these states, from the inaccessible nature of their haunts, which are deep jungles, lofty trees, thick bushes, and the interior of water plants, where the larvæ, by a kind and wise Providence, have been taught to conceal themselves. Some also inhabiting more open situations, escape the attacks of even their natural enemies—birds—by their exact resemblance to the branches and leaves of trees. Many of the *Geometridæ*—"surveyors" as they are termed—are capable of standing erect and motionless for hours together, like a dead twig. To the touch even they are hard and round, owing to the amazing force of their muscles.

I will now proceed to describe the best method of capturing the perfect fly. Nets of various forms are used by collectors at home and abroad. Of all, I prefer the common ring or bag net. This is made of a thin piece of rattan, bent circular, and fastened to a handle about three and a-half or four feet long, according to the strength of the user. The best handle is a ground rattan, about three-quarters of an inch in diameter; this is light, flexible, and will not break in a rough fall. The ring should be one foot and a-half in diameter—more, if practicable and manageable,—and a permanent fixture to the handle.

The net itself should be of some soft transparent material, (silk gauze is best, as it least injures the down on the insect's wings), shaped like a bag and about the depth of the user's arm, to enable him to reach to the bottom and secure his capture. The net should be fastened to the ring by a band of calico three or four inches broad; this is a great protection to the net when striking at an insect resting on a leaf. A good-sized collecting box is required to secure the captured insect, and should be made with rounded corners to prevent an awkward bruise to the owner in case of a fall. It should open easily when held in one hand—by a spring is preferable—leaving the other at liberty to handle the specimen. It should also be lined at the top and bottom with cork, or *kirrilla-mulla* a substance more fully described hereafter—to receive the pins. For this, and other tropical climates, let the boxes be twice the size of those used at home.

Thus equipped, let the collector (who should be dressed in darkish clothes) repair to any open space in the jungle between the hours of 7 and 10 A.M.; after that time it becomes too hot, and the insects keep in the deep shade. Let him select an overhanging tree, affording him shelter from the sun, and a screen from the insects, and from thence watch his insect game come gliding past, or hovering over some favourite flower, and use his best efforts to capture it. Practice will teach this better

than I can, except that it may not be amiss to mention that when the insect is fairly within the net, a sudden turn of the wrist will, by doubling the gauze over the handle, prevent its escape. I have always observed that butterflies fear a stationary object much less than a moving one, and will often fly within reach of your net when *standing still*, although they will not suffer you to *approach* them; they are quickly alarmed on being followed, and generally fly high over head. Butterflies delight in alternate shade and sunshine, and will keep about the same spot for days together, particularly in the neighbourhood of water, by which they will settle and drink copiously, and many insects seldom captured on the wing may be taken whilst drinking. *Ipias Glaucippe*, for instance, a most rapid and wary insect, I have seen on the flooded roads by thirty or forty at a time, and have actually ridden over them before they rose, when they would immediately settle again. The *Polyommata*, and *Thecla* tribes should be sought for about the broad-leaved plants upon which they fix their thrones and combat any rival which may appear, to the great detriment of their beauty, causing them to lose their slender tails and brilliant glossy tints. In fact, every insect has its own localities, which can only be learned by practice and attention to its habits. About 10 o'clock the collector may return home till 3 or 4 P.M., when the butterfly tribes again venture forth, though he now will not capture such fine fresh specimens as in the morning—the butterflies always escaping from the pupa early in the morning, the moths in the evening. However, he may make good captures, particularly among the *Hesperia* or “skippers,” and the *Theclas*; and as the evening closes in, and the short Eastern twilight comes on, he will be amply rewarded by *Hesperidæ* and *Sphingidæ*: the former flying heavily along, the latter darting swiftly from flower to flower, never alighting, but dipping their spiral tongues into the dewy flower cups, and extracting their hidden sweets. I have observed in this part

of the country (Colombo), that true *Noctua* are not commonly met with on the wing. It may be from the prevalence of the cinnamon plant, on which few feed.

But we must now return to the collector, and instruct him how to preserve his captured insects. For this purpose he must have a pair of spring forceps, a setting-needle, (which is a fine pin or needle, bent at the point, and fixed in a handle,) pins of all thicknesses and lengths from four inches to half an inch, and a *setting-box*, which should be lined with cork and be of sufficient size to contain 80 or 100 specimens; it should be just deep enough to hold the insect pins, and the cork should be half as thick again as in the store-boxes, so that when the pin is driven home in the latter the insects' wings may be just a little above the surface. The box must be air-tight, and well supplied with camphor in neat bags, for the double purpose of killing the insects and preserving them from mites, &c.

Let him now take the specimen to be set, having previously given it a slight squeeze under the thorax or chest, and run a proper-sized pin through the middle of the thorax, inclining it slightly towards the body, taking care that it is at perfect right-angles with the wings. Having stuck it down uprightly through the cork, let him take two pins of proper length, and stick them in with the forceps, at a little distance from the base of the inferior wings, pressing them down towards the surface of the cork, inclining outward towards the outer angle of the superior wings. Then, introducing the point of the setting-needle under the wings, gently push them into the position of a butterfly expanded upon a flower. If the long pins press the wings sufficiently down on the cork, the roughness will keep them in their proper place; if not, fasten down the long pins by common thick ones bent in two right-angles. A good substitute for the long pins may be found in the thorns of the prickly pear, or the inside rib of the cocoanut leaf termed by the natives "ikkils." In this state leave them till dry, or *set*, the length of time

depending on a moist or dry season. They are then fit to remove into the store-boxes, which like the setting-box must be made quite air-tight, and constantly supplied with camphor; without this precaution the labour of months will quickly become the prey of mites, *Tineæ*, and a host of other enemies. "Kirillamula" is, as the Sinhalese word expresses it, the root of the Kirilla tree (*Sonneratia Acida*, L.) and is found about the banks of fresh water rivers and tanks. Kalutara produces the finest. It is very light, and easily receives the pin. It should be sawn into slabs, about a-quarter or three-eighths of an inch thick, well smoothed with sand paper and glued into the boxes, then neatly pasted over with the thinnest and softest white paper. The generic name of each family should be placed at the commencement of the group, the specific name under each insect. A number should also be appended, as a reference, and a catalogue made of the name, place of capture, description or drawing of caterpillar, and food, if known, in separate columns. Where space is no object, several of each species should be kept, say, for instance, two males and two females and an underside of each; as in many cases the male and female are so dissimilar as to be mistaken for separate species. Insects being very local, duplicates should always be kept, to exchange with other collectors in various parts of the country.

NOTE.—Dried specimens received from correspondents may always be *re-set* to the collector's fancy by previously relaxing them, which is effected by placing them in a covered vessel half full of damp sand covered with a sheet of blotting paper. Some recommend hot water instead of sand. The smaller insects will be fit for stretching in a few hours: the larger often require from two to three days.

When the specimens are perfectly dry, they should be touched with a solution of corrosive sublimate and spirits of wine, not too strong lest a white sediment be deposited.

*List of Indigenous Diurnal Lepidoptera, with their Localities.*1.—*Papilio*.

Haliphronvar	} Generally distributed.
Polymnestor	
Pamon	
Hector	
Mutius	
Polytes	
Polydorus	
Crino	
Agamemnon..	
Sarpedon.....	} Interior only.
Epius	
Dissimilis	
Helenus	
Eurypilus	} Interior only.
Two unnamed	

2.—*Ianais*.

Plexippus	} Ubique.
Chrysippus...	
Limniace	
Milissa	} Kandy district.
Aglææ	

3.—*Euplæa*.

Corus	Ubique.
Prothœ	Southern coast.
Two unnamed.	Interior.

4.—*Diadema*.

Bolina	} Ubique.
Lasinassa	
Auge	

5.—*Idea*.

Lynceus.....	Interior.
--------------	-----------

6.—*Iphias*.

Glaucippe.....	Ubique.
----------------	---------

7.—*Pieris*.

Hippia.....	} Western coast.
Phryne	
Severina	
Eucharis	
Paulina	

MamounaInterior.

Four other species, one supposed to be a fine variety of
 Nama(Doubleday.)

8.—*Pontia*.

Nina	Ubique.
------------	---------

9.—*Callidryas*.

Alemeone	} Ubique.
Hillaria	
Pyranthe	
Two others unnamed.	

10.—*Anthocharis*.

Eucharis	} Aripo, W.
Dauæ	

11.—*Idmais*.

One unnamed	} Chilaw,
species	

12.—*Colias*.

Three unnamed	} W. coast,
species	

13.—*Thestias*.

Mariamne.....	} W. coast, jungle.
Pirene	
One unnamed species.	

14.—*Terias*.

Hecabe	Ubique.
One unnamed...	Interior, hills

15.—*Hipparchia*.

Leda	Ubique.
Seven unnamed.	

16.—*Satyrus*.

Chenus	Interior.
One unnamed.	

17.—*Adoeias*.

- Iphita Ubique
 Lubentina ... { Generally
 distributed.
 Three unnamed.

18.—*Vanessa*.

- Laomedia..... }
 Cardui } Ubique.
 Asteriæ }
 Ænone..... } Jaffna.
 Orithia..... }
 Lemonias..... Ubique.
 Vulcania } Interior.
 Charonia }
 One unnamed. Chilaw.

19.—*Limenitis*.

- Aceris } Ubique.
 Procris } Interior
 generally.
 Heliodora Interior.
 One unnamed... Ubique.

20.—*Cynthia*.

- Arsinoe } Southern coast
 and interior.

21.—*Argynnis*.

- Phalanta } Ubique.
 Erymanthus }
 Niphe Interior.
 Two unnamed.

22.—*Acbæa*.

- Violæ Ubique.

23.—*Cethosia*.

- One unnamed... Ubique.

24.—*Ergolis*.

- Coryta } Ubique.
 Ariadne }
 One unnamed.

25.—*Melanitis*.

- Undularis { Where cocoa-
 nut trees grow.

26.—*Libythia*

- One unnamed... Interior.

27.—*Emesis*.

- Two unnamed.

28.—*Amathusia*.

- One unnamed... Ubique.

29.—*Charaxes*.

- Bernhardus ... Ubique.
 Three unnamed.

30.—*Minetra*.

- Gambrisius ... Interior

31.—*Erycina*.

- One unnamed... Interior.

32.—*Myrina*.

- Four unnamed... Ubique.

33.—*Polyommatus*.

- Rosimon } These tribes
 Nyseus } are very
 Eythion } generally
 Sixteen un- } distributed
 named. } over the
 Island.

34.—*Thecla*.

- Hercules }
 Narada }
 Nila } do.
 Elpis }
 Epijarbas }
 Vulcanus }

Twenty-four unnamed.

35.—*Loxura*.

- Atymnus Ubique

36.—*Hesperia*.

- Thirty-six }
 unnamed } Ubique.

ON BUDDHISM.—*PATTA KAMMA*.

OR, THE PRESENT RESULT OF VIRTUOUS CONDUCT.

BY THE REV. D. J. GOGERLY.

(Read 4th November, 1848.)

While Bhagawá resided in Jétawana, a park belonging to Anáthapiṇḍako near Sēwet, the Gahapati Anáthapiṇḍako went there, and, having worshipped Buddha, sat down at a respectful distance. When he was seated Bhagawá said :

“Gahapati, there are four objects difficult of attainment, yet desirable, gratifying and productive of pleasure. The first of these is the attainment of wealth in conjunction with piety.

The second is, having obtained wealth in conjunction with piety, to be applauded by relatives and judicious friends. The third is, having obtained wealth in conjunction with piety, and being applauded by judicious friends, to live long in the enjoyment of health. The fourth is, having obtained wealth in conjunction with piety, having been applauded by relatives and judicious friends, and having lived long in the enjoyment of health, to obtain, upon the dissolution of the frame by death, a heavenly state, where all is enjoyment. These, Gahapati, are the four objects, difficult of attainment, yet desirable, gratifying and productive of pleasure.

“For the attainment of these objects four things are necessary. The being endued with faith, with virtue, with liberality, and with wisdom.

What is the being endued with Faith ? A disciple of Buddha has a correct creed : he believes that Bhagawá is immaculate, that he is the supreme Buddha, perfect in wisdom and excellent in conduct ; that he is acquainted with the state of all worlds ; is the subjector of men and their infallible guide ; the preceptor

of Gods and men, the wise, the blessed one. This belief constitutes the being endued with faith.

“What is the being endued with Virtue? A disciple of Buddha abstains from destroying life, from stealing, from illicit intercourse with females, from lying, and from inebriating liquors, which cause irreligion. These constitute the being endued with virtue.

“What is the being endued with Liberality? The disciple of Buddha delights in almsgiving, gives with clean hands and with a benevolent mind, seeks opportunities for liberality, and lives free from the defiling influence of avarice. This constitutes the being endued with liberality.

“What is the being endued with Wisdom? He who is avaricious, covetous, and subject to hardness of heart, does that which is wrong, and neglects that which is right, and thus forfeits both his reputation and happiness. He who is malicious, or is slothful and indolent, or of a haughty and irritable character, or whose mind is perplexed with religious doubts, does that which is wrong and neglects that which is right, and thus forfeits both his reputation and happiness. The disciple of Buddha, knowing that these dispositions pollute the soul, banishes from his mind avarice, maliciousness, sloth, indolence, irritability, and religious doubts : this disciple of Buddha is wise, prudent and intelligent. This constitutes the being endued with wisdom.

“These are the things necessary for obtaining the four objects difficult of attainment, yet desirable, gratifying, and productive of pleasure.

“Such a disciple of Buddha, through the wealth he has honestly and justly acquired by manly vigor, by strength of arm and by laborious efforts, secures four advantages. The comfort and happiness of himself, of his family, of his domestics, and of his friends and connections, is provided for. This is the first advantage he derives from his well-employed wealth. If there be any losses from fire, from inundations, from oppressive rulers,

from thieves, from untoward events, or from family circumstances, the disciple of Buddha, through the wealth he has thus honestly and justly acquired, secures himself, under these circumstances of loss, from danger, and is preserved from suffering. This is the second advantage he derives from his wisely-employed wealth. Furthermore, the disciple of Buddha, by the wealth he has thus honestly and justly acquired, is enabled to present the necessary gifts to relatives, to sages and Brahmins, in honor of deceased ancestors, to princes and to the gods. This is the third advantage he derives from his wisely-employed wealth. Again, the disciple of Buddha, by the wealth he has justly and honestly acquired, ministers to those holy men, Priests and Brahmins, who, abstaining from concupiscence, live peaceably and virtuously, and by the exercise of self control subdue and extinguish their passions. By their means he provides for himself future happiness, a residence in one of the heavens, continued pleasure and celestial enjoyments. This is the fourth advantage he derives from his wisely-employed wealth.

“ If a person expend his wealth so as to produce these advantages, his property has not been thrown away, but has produced its appropriate results, and has been enjoyed judiciously. He will be able to reflect: I have supported those whom it was my duty to maintain; I have been freed from disasters, have presented the five principal donations, and bestowed gifts which will produce advantages in a future state. I have ministered to the necessities of placid, holy and virtuous men, and have accomplished all the objects a wise and judicious layman could wish to effect through the possession of wealth. Even in this world I am applauded by wise men, who are established in virtue, and who investigate my conduct, and in a future state I shall have the enjoyment of celestial pleasure. ”

Upon hearing this, the Gahapati Anáthapindako being much delighted and edified with the discourse of Bhagawá, rose from his seat, and, having worshipped him, departed.

A DISCOURSE TO SOME INHABITANTS OF WERANJA.

Thus I heard. On one occasion Bhagawá resided near Sēwet in a monastery founded by Anáthapindiko at Jétawana. Some Brahmins and cultivators of Wéranja having arrived at Sēwet on business, heard respecting Bhagawá that the Samana Gótamo of the Sákya race had left his Sákya connections, and retired from secular life, and that he was then residing near Sēwet in the monastery founded by Anáthapindiko at Jétawana. They also heard that the voice of his fame had ascended, proclaiming that this illustrious person is perfectly holy, all-wise, skilled in all science, unimpeachable in conduct, acquainted with all existing objects, the supreme director and controller of men, the preceptor of all beings human and divine, the Buddha, the Illustrious One. He, by his own inherent wisdom, has fully ascertained and developed the nature of the universe, including the gods, Márayas, Brahmas, Sages, and Brahmins, and the assemblage of princes and people. He makes known his doctrines, excellent in their principles, excellent in their development, and excellent in their final results, replete with instruction and eloquence, and enforces a completely perfect and immaculate course of virtuous conduct. It is highly desirable to have an interview with so eminently holy a person.

The Brahmins and cultivators of Wéranja accordingly went to the residence of Bhagawá. Some of them worshipped him and sat down; others entered previously into pleasing conversation with him; some, placing their joined hands to their foreheads, bowed reverently; some announced their names and family connections, and others sat down silently. When they were seated they said: "What is the reason, Gótamo, and what is the cause, why some beings upon the dissolution of the system by death are reproduced in hell, the abode of wretchedness, misery, and continued anguish; and why others are reproduced in the heavenly world the abode of happiness?"

They replied: "Excellent Gotama, we do not distinctly understand the meaning of what has been thus succinctly and generally declared. Will the excellent Gotamo explain that which has been thus declared, so that we may clearly understand it?"

"I will explain it. Cultivators, listen and carefully consider."

The Brahmins and cultivators of Weranja replied: "Do so, Gotama."

Bhagawá accordingly said: "There are three kinds of vice and profligacy in action, four kinds in speech, and three in the dispositions of the mind.

"What, cultivators, are the three kinds of vice and profligacy in action? A man is a destroyer of animal life, cruel, bloody-handed, constantly tormenting and destroying, and unkind to all around him. Or he is a thief, taking the property of others, whether it be deposited in an inhabited or uninhabited place, appropriating to himself, with a dishonest intent, property which is not given to him. Or he is dissolute in his conduct with females, having illicit intercourse with such as are under the guardianship of a mother, of a father, of a brother, of a sister, or of relatives, or who may have a husband or be a ward of the Crown, or contracted to a man by having only a flower garland thrown over her person. Such, cultivators, are the three kinds of vice and profligacy connected with the body.

"What are the four kinds of vice and profligacy in speech? A man, cultivators, is a liar. He is summoned to give evidence in a court of justice, or in the presence of his attendants and relatives, or before a general assembly, or in the king's palace; and when it is said to him—'O man! speak that which you know,' he says 'I know,' concerning that of which he is ignorant; 'I do not know,' concerning that with which he is acquainted; 'I saw,' concerning that which he did not see; and 'I saw not,' concerning that which he did see; and thus, whether to benefit himself or others, or in consequence of being bribed, he

becomes a wilful liar. Or a man is a calumniator, mentioning in one place what he has heard in another, in order that he may cause dissension; he introduces divisions among those who were peaceable, and prevents the reconciliation of opposing parties; he is quarrelsome, delights in contests and disputations, and by his words stirs up animosity. Or a man is intemperate in speech, using contumacious, harsh, irritating and contemptuous language, producing disquietude and anger. Or he is frivolous in discourse: he speaks unseasonably, affirms things which are incorrect and contrary to virtue and propriety; his words are unworthy of regard, ill-timed, injudicious, unguarded and unedifying. These, cultivators, are the four kinds of vicious and profligate discourse.

“What are the kinds of mental vice and profligacy? A man, cultivators, is exceeding covetous, desiring that which belongs to others, thinking—‘Oh that I could obtain possession of that man’s property!’ Or he is a malicious and ill-disposed man, wishing—‘May that person be tormented, may he be killed or die, or come to ruin, or be reduced to abject poverty!’ Or he is heretical and heterodox: he affirms that there is no advantage from alms-giving, offerings, and sacrifices; that there are no future good or evil results of men’s actions, no causes of present or future birth, or for having a specific father and mother; that there are no beings who have mature existence without the intervention of birth and childhood. That there are no sages and holy men, who by their own wisdom have ascertained and teach the nature of this and of other worlds. These, cultivators, are the three kinds of mental vice and profligacy. In consequence of such a vicious and profligate life, some beings upon the dissolution of the system by death are reproduced in hell, the abode of wretchedness, misery, and continued anguish.

“There are, also, cultivators, three kinds of holy and virtuous conduct, four kinds of holy and virtuous speech, and three kinds of holy and virtuous thoughts. What are the three kinds of

holy and virtuous conduct? A man, cultivators, abstains from taking away animal life, lays aside the cudgel and the sword, and is gentle, ashamed of cruelty, and compassionate to all beings. He also abstains from taking that which does not belong to him, and does not with a dishonest intent appropriate to his own use the property of others, whether it be deposited in an inhabited or uninhabited place. He is chaste in his conduct, and abstains from illicit intercourse with females who are under the guardianship of a mother, a father, a brother, a sister, or of relatives, or who has a husband, or is a ward of the Crown, or contracted to a man by even throwing a garland over her person. These, cultivators, are the three kinds of virtuous conduct.

“What are the four kinds of holy and virtuous speech? A man, cultivators, abstains from lying and speaks the truth. When brought to give his testimony in a court, or among his attendants and relatives, or before a general assembly, or in the king's palace, and it is said ‘O man! speak what you know,’ he says concerning that of which he is ignorant, ‘I do not know;’ concerning that with which he is acquainted, he says ‘I know;’ relative to that which he has seen, he states ‘I saw it;’ and concerning that which he has not seen, he replies ‘I have not seen it;’ and thus he does not speak a wilful lie to benefit either himself or others or on account of any bribe. He also abstains from calumny and lives without slandering others. He does not, in order to promote divisions, detail in one place that which he has heard in another, but is a reconciler of differences and a strengthener of friendships: he lives in peace, delights in kind feelings, rejoices in union, and his conversation tends to promote harmony. He also abstains from irritating language and contumacious expressions; his words are free from asperity, pleasing to the ear, affectionate, soothing, gentle, and affording general satisfaction and pleasure. He also abstains from frivolous discourse; his language is suitable to the occasion, true,

instructive, inculcating virtue and true knowledge, and being reasonable, judicious, perspicuous, and edifying, is worthy of being treasured in the mind. These, cultivators, are the four kinds of holy and virtuous speech.

“What are the three kinds of mental holiness and virtue? A man, cultivators, is not covetous, and does not desire the property of others, thinking ‘O that it were mine!’ He is not malignant, but with a sincere mind desires that others may be free from angry passions, that they may be free from suffering and distress, and be able to maintain themselves in comfort. He is orthodox, having correct religious views. He acknowledges that there are meritorious gifts, offerings and sacrifices; that there will be future good and evil results of men’s conduct; that there are causes for existence in this and in other worlds for having a specific father and mother; that there are beings mature in form without the intervention of birth or childhood; that there are sages and holy men placid and established in virtue, who by their own wisdom have ascertained and declared the nature of the present world and of other states of being. These are the three kinds of mental virtue and holiness. In consequence, cultivators, of this holy and virtuous life some beings, upon the dissolution of the system by death, are reproduced in the happy and heavenly worlds.

“If, cultivators, a holy and virtuous man experiences a desire in his mind, ‘Oh that upon the termination of my present existence by death I may be born of an opulent Khattiya family!’ and the event takes place that after the termination of the present life he is born of a rich family of the Khattiya tribe, the reason is that he was for that purpose sufficiently holy and virtuous. [The same is literally repeated respecting the Brahminical and cultivating classes: the heavenly worlds, and the Rûpa and Arûpa worlds.] If, cultivators, a holy and virtuous man experience a desire in his mind, ‘Oh that by the passions becoming extinct, I may know and fully ascertain for

myself, in the present state of being, the nature of the freedom of wisdom, consisting in a deliverance of the mind from the influence of desire! the event takes place; and if by the passions becoming extinct, he, in the present state of existence, knows, and fully ascertains for himself, the nature of the Freedom of Wisdom, consisting in a deliverance of the mind from the influence of desire, the reason is that he was for that purpose sufficiently holy and virtuous."

When he had thus spoken, the Brahmins and cultivators of Weranja replied: "Excellent, O Gotama, most excellent. As though that which was overturned were placed erect; as though the covering were removed from a concealed object; as though a wanderer were directed to the right path, or as though a brightly shining lamp were brought into a dark place rendering all things visible; so has Gotama, in various modes, made known his doctrine. We take refuge in Gotama, in his doctrines and in his priests. Receive us, Gotama, as disciples. From this day to the end of our lives we take refuge in Gotama."

MAHÁ DHAMMA SAMÁDÁNA SUTTAN.

THE LARGER DISCOURSE ON THE RESULTS OF CONDUCT.

When Bhagawá was residing near Sēwet, in the monastery founded by Anáthapindika at Jétawana, he called his priests, saying "Opriests." The priests replied, "Sire;" when Bhagawá said: "There are many persons, priests, whose desires, wishes, and thoughts are, 'Happy would it be if the things which are undesirable, disagreeable, and unpleasant were removed, and objects desirable, agreeable, and pleasant were abundantly increased.' The persons, priests, who have this wish and desire, and who hold this opinion, experience an increase of undesirable

and unpleasant circumstances and a loss of the things which are desirable, agreeable, and pleasant. Do you, priests, understand the reason of this?"

"Bhagawá, Sire, is our teacher, our guide, our director. Bhagawá, declare the doctrine, and the priests, hearing the words of Bhagawá, will receive the instruction.

"If so, priests, hear and attentively consider; I will declare it."

The priests replied: "Do so, Sire."

Upon which Bhagawá said:—"The unlearned and sensual man, being a disregarder of Rahats, ignorant of their doctrines, and disobeying their precepts; being a disregarder of holy men, ignorant of their doctrines, and disobeying their precepts, knows neither what he ought to do nor what he ought to leave undone; what to regard nor what to disregard; and accordingly engages in that which he ought to avoid, and neglects that in which he ought to be engaged; regards that which he ought to disregard, and disregards that which he ought to regard, and by acting in this way brings increasingly upon himself that which is undesirable, disagreeable, and unpleasant; and fails to obtain the things which are desirable, agreeable, and pleasant. The cause of this is his being unwise.

"But, priests, the learned and eminent disciple of Buddha, being a regarder of Rahats, acquainted with their doctrines and obedient to their precepts; being a regarder of good men, acquainted with their doctrines, and obedient to their precepts, understands what he ought to do, and what he ought to leave undone; what he ought to regard and what to disregard; and accordingly does what he ought to do, and leaves that undone which he ought not to do; and by acting thus he avoids the things which are undesirable, disagreeable, and unpleasant, and obtains abundantly those which are desirable, agreeable, and pleasant. The cause of this is his being wise.

"There are, priests, four classes of conduct causative of events: namely, that which produces present sufferings and

future painful results ; that which produces present enjoyment and painful results ; that which produces present sorrow and future happy results ; and that which produces present enjoyment and future happiness.

“The unwise and ignorant do not distinctly understand the line of conduct which produces present pain and future sorrow ; in consequence of which ignorance, instead of forsaking that line of conduct they follow it, and by so doing they bring increasingly upon themselves things undesirable, disagreeable, and unpleasant, and fail to obtain those which are desirable, agreeable, and pleasant. The reason of which is that these are the results of ignorance.

“The unwise and ignorant do not distinctly know what is the line of conduct which, producing present enjoyment, leads to painful results, in consequence of which ignorance they do not forsake that line of conduct, but pursue it, and thus bring increasingly upon themselves things which are undesirable, disagreeable, and unpleasant, and fail to obtain those which are desirable, agreeable, and pleasant. The reason of which is that these are the results of ignorance.

“The wise and learned distinctly understand the line of conduct, which, though painful at present, produces happy results ; and in consequence of that knowledge and learning pursue that line of conduct, and do not forsake it, and thus avoid those things which are undesirable, disagreeable, and unpleasant, and increasingly obtain those which are agreeable, pleasant, and desirable. The reason of which is that these are the results of wisdom.

“What, priests, is that line of conduct which produces present pain and future sorrow ? There are some persons who, enduring sorrow and distress, are destroyers of animal life, or who are thieves, or lewd, or liars, or slanderers, or revilers, or foolish babblers, or covetous, or malignant, or heterodox, and who in consequence of this conduct have in the present world to endure

pain and anguish ; and who, upon the dissolution of the system, are after death reproduced in hell, the abode of wretchedness, misery, and continued anguish. This, priests, is the line of conduct which produces present pain and future sorrow.

“What is that line of conduct, priests, which affords present gratification but produces future misery? Some persons in the enjoyment of pleasure and delight are destroyers of animal life, thieves, lewd, liars, slanderers, revilers, foolish babblers, covetous, malignant, heterodox, and who from these practices experience pleasure and gratification ; but upon the dissolution of the system they are, after death, reproduced in hell, the abode of wretchedness, misery, and continued anguish. This, priests, is the line of conduct which affords present gratification, but produces future misery.

“What, priests, is that line of conduct which, although at present painful, produces happy results? Some persons, priests, although enduring pain and disquietude, abstain from destroying animal life, from dishonesty, from lewdness, from lies, from slander, from reviling, from vain babbling, from covetousness, from malignancy and from heterodoxy, and who in consequence of abstaining from these have to endure pain and disquietude ; but upon the dissolution of the system they will, after death, be reproduced in a happy heavenly world. This, priests, is the line of conduct which produces present pain, but leads to future happy results.

“What, priests, is that line of conduct which gives present pleasure and leads to future happiness? Some persons, priests, being happy and contented, abstain from destroying animal life, from dishonesty, from lewdness, from lies, from slanders, from reviling, from foolish babbling, from covetousness, from malignancy and from heterodoxy ; and who, in consequence of abstaining from these things, are happy and contented in the present world, and upon the dissolution of the system they will, after death, be reproduced in a happy heavenly world. This, priests,

is that line of conduct which gives present pleasure and leads to future happiness.

“ These, priests, are the four classes of conduct causative of events, and may be thus exemplified:—If a bitter gourd be poisoned, and a man come who loves life and would avoid death, who wishes for pleasure and is averse to pain, and it be said to him: ‘O man! this bitter gourd is poisoned; if you desire it, you may eat it, but it is unpleasant in colour, in odour, and in taste, and will either cause death or mortal anguish.’ If he, disregarding this, instead of rejecting it, should eat of it, he will have no gratification from its colour, its taste, or its smell, but will either die or suffer excruciating pain. To this, priests, I compare the line of conduct which produces present pain and future suffering.

“ Or, priests, if there be a golden goblet, filled with sparkling, fragrant, and exquisitely flavored wine, yet mingled with poison, and a man come desirous of life and unwilling to die, attached to pleasure and averse to pain, and it is said to him, ‘O man! the wine in this chalice is of a beautiful colour, fragrant, and of exquisite flavor, but poison is mingled with it. Drink of it if you will; but although you will be gratified with its colour, its fragrance, and its flavor, you will lose your life or endure mortal anguish.’ If he, disregarding this, should not reject the cup, but drink its contents, although gratified with its colour, its fragrance, and its flavor, he will either lose his life or endure mortal anguish. To this, priests, I compare the line of conduct which yields present pleasure, but produces future misery.

“ If, priests, there be cow’s urine, impregnated with various medicaments, and a man with jaundice come, and it be said to him, ‘O man! this cow’s urine is impregnated with powerful medicinal properties; drink it if you will. It is disgusting to the eye, to the taste, and to the smell, but it will produce good effects.’ He, considering this, does not reject the remedy, but

drinks, and although it disgusts his sight, his smell, and his taste, he becomes cured. To this, priests, I compare the line of conduct which gives present pain but produces future happiness.

"If, priests, there be a mixture of curds, honey, clarified butter, and sugar, and a man with dysentery come, and it is said to him, 'O man! this is a mixture of curds, honey, clarified butter and sugar; take it if you will. It is pleasing to the sight, to the taste and to the smell, and after taking it you will be better.' He, considering this, does not reject the medicament, but takes it, his sight, taste, and smell are gratified, and upon using it he is benefited. To this, priests, I compare that line of conduct which produces present pleasure and future enjoyment.

"As, priests, during the sultry weather in the last month of the year, when the atmosphere is free from clouds, the sun, rising above the horizon, dispels the deep shades of night and shines, irradiating all around with its splendor; even so, priests, the doctrine of the line of conduct producing present pleasure and future happiness sheds its lustre, its refulgence, and its splendor around, dispelling the controversial darkness of multitudes of Samanas and Brahmins."

When Bhagawá had thus spoken, the priests were much edified by the discourse.

THE RURAL ECONOMY OF THE SINHALESE,
(MORE PARTICULARLY WITH REFERENCE TO THE
DISTRICT OF SABARAGAMUWA), WITH SOME
ACCOUNT OF THEIR SUPERSTITIONS.

BY R. E. LEWIS, ESQ.

(*Read 4th November, 1848.*)

THE prosperity of a country without manufacturing pre-eminence, and wanting in commercial advantages, will naturally be tested by its adaptation for agricultural pursuits, and the industry and skill displayed by its inhabitants in cultivating the earth.

Ceylon, as the country of the Sinhalese, is not a commercial country even at its principal port, Colombo: The number of natives engaged in trade is comparatively few,—the Chetties (merchants of India) and Moormen carrying on the far greater part of the intermediate trade between the European importer and the consumer, these classes also being the chief importers of grain and cloth from India.

The chief pursuit of the Sinhalese is undoubtedly *agriculture*, though it would appear from the large importation of grain, equal in value to £460,000 annually, that their skill and industry is upon the most limited scale. Making every allowance for the influx of a large immigrant population of Malabars from India, to cultivate the coffee estates which have been planted by Europeans within the last eight years, it is yet well known and proved by the importations previous to that date, that the rice required for their own consumption has been partially supplied from other countries. The population is also very thinly scattered, many fine tracts of country being wholly uninhabited, and amounts to about one million and a half of

people, or about 59 persons to the square mile. From these facts we draw the conclusion, that either the soil is so exceedingly barren as only to yield a precarious crop under the greatest care and pains bestowed on its cultivation: that the quantity of land available for cultivation is exceedingly limited compared with the population: or that the cultivation is carried on in an unskilful and slothful manner. Without doubt all these causes exist, more or less, and operate to restrict the agriculture of this people, varying in degree in different parts of the country.

In the absence of communication by roads, and the nature of their cultivations chiefly restricting them to inhabit secluded valleys, it is not surprising that their agriculture should be carried on in the same rude and primitive manner as it was in past ages, apparently unimproved either in the manner of working the ground or in the implements used for the purpose. Their few wants being so easily supplied, there has been an absence of every inducement to increased and improved tillage; whilst their superstitious observances respecting times and seasons, handed down to them from a remote period, have had their effect in tying them down to the customs of their forefathers.

In considering the circumstances which have combined to keep the agriculture of the Sinhalese in its original primitive form, the taxation of paddy lands must not be left out of view, as unquestionably operating to prevent increased production. The amount of the tax is uncertain, and assessed yearly by persons appointed to that duty, and afterwards collected by a renter or middleman, whose powers under the present law are most vexatious at all times, and may at will be made highly oppressive to the cultivator. It is a feeling implanted in the human breast to resist extortion. The husbandman, seeing that an increase of crops leads also to an increase of his own burdens, and enables the tax-farmer to add to his annoyances,

feels deterred from increasing his cultivation, his fear of oppression preponderating over his desire to possess. My purpose being to treat of the agriculture of the country, and not of the system of its taxation, it is not for me to pursue this part of the subject further. It may be said, however, that the mode in which the taxes on grain are collected in the rural districts of the country, as affecting the morals and retarding the civilization of the inhabitants, is a subject worthy of the study of the philanthropist and statesman. Until the present system is abolished, and the taxes are collected directly from the payer by the authorized and responsible servants of Government, there is little room to expect any improvement whatever in the moral and social condition of the people. The labourer is worthy of his hire, says the proverb, and those means which will ensure it to him, which will give to the agriculturist the the fullest advantage of his industry, must precede any attempt to ameliorate the modes of tillage at present practised.

The natives of the interior for the most part subsist upon vegetable and farinaceous diet. Dried fish and dried deer flesh are used as a condiment in the seasoning of their dishes. Of animal food, with the exception of the flesh of a few wild animals, they consume but little. Rice is their staff of life. Kurakkan, a seed which is ground into flour, they also use in addition to coconuts, yams, sweet potatoes, and the fruit of the jack-tree. These with a few green vegetables and chillies for their curries, comprise the whole to which they give any attention in the way of cultivation, unless we except the coffee tree and the arekanut tree, which grow without any care whatever bestowed upon them about their dwellings.

The staple production of the Sinhalese is *paddy*, of which 11 different kinds are known. The *Ratkunda*, *Ballannani*, *Marlawarige*, *Kallu Kombilli* and *Tattunai*, requiring about four months to bring them to maturity, are sown generally in March. The *Hinnaṭi*, *Sudu hinnati*, *Mudu-kiriḷ*, and

Kuru-vi are three months upon the ground, and are sown, if the season is favorable, in May or June. The kind called *Bálá Má-vi* requires the long period of five months before reaping, and is generally put in the ground in November. *Dassanel*, a kind grown in the low-country, is of very rapid growth, two months being sufficient to bring it to maturity; it is chiefly sown in June.

The periods of sowing paddy differ with the district and description to be sown. The growth so entirely depending upon the irrigation, the seasons for sowing must always be chosen when the streams are full, and at the time of year when a continuance of rain, either in the locality itself or in the higher ranges in which the streams take their rise, will insure an adequate supply throughout the period of growth. In these respects, locality with reference to the entire mountain district, or proximity to or distance from high ranges of hills, make the alternation of seasons and prevalence of wet or dry weather to differ over the whole face of the country, and consequently the periods of agricultural operations.

The cultivation of paddy is of two kinds: sowing upon cleared land upon the hill-side, and sowing in swamps where the land has been prepared by irrigation. The latter is the kind of cultivation more generally employed, and the lands used for the purpose can be sown from season to season and year to year, whereas the hill-paddy, as it is called, will only grow upon a soil which has been many years undisturbed, and upon which the exuberant vegetation must be allowed to spring up and grow for a lengthened period before it can be again used for this cultivation.

The paddy swamps of the low-country and the mountains are very different.

In the low-country, with very little variety of level, they are generally formed out of natural swamps, and the irrigation is performed with much labour by baling the water with large

scoops suspended to a triangle from one division of a the field to another. In the lower levels, owing to the want of a general system of drainage, the crops suffer greatly in very wet seasons, the plant being frequently carried away, or injured, from too long immersion in the water. Seasons of drought are no less fatal to it. On the mountains the formation of paddy fields is entirely artificial, and the whole system bears witness to considerable skill and ingenuity on the part of the cultivators. Passing through some of the rocky ravines of this picturesque country, one is surprised at the beautiful appearance of cultivation, which has obviously been produced under the greatest natural difficulties. When spots of this kind have been selected, a very superior description of rice is frequently produced, owing probably to the good natural soil so frequently found amongst rocks, and also from the great distance travelled over by the irrigating stream, more fertilizing particles are brought down by it than by streams, which take their rise in swampy ground and run but a short distance. The European inhabitant of Colombo who should perchance visit these romantic solitudes will find a relish and a nourishment in the dish of new rice set before him, which he little expected from that grain; something which will remind him of those exquisite compositions of wheaten flour, for which our country house-wives at home are so famous. I have said that the formation of paddy fields in the mountains is a work of much ingenuity and skill; it is also one which is always progressing step by step. Terrace above terrace is added to the field every season, until that which commenced in one little shelf, from above which the rocky streams dashed below, now covers the whole mountain gorge, with a bright harvest waving to the breeze.

The operations for preparing the ground for sowing the seed cover much time, not in the steady occupations of industry, but by the long intervals which occur between the several

processes to which the ground is subjected. The land having been grazed over by cattle since the last crop was taken, water is allowed to run over its baked surface for several weeks. When by this means it has become somewhat softened, it is hoed over in a manner which breaks the surface into clods, the sod coverings of which are turned over, and, water being once more suffered to run over it, the grasses are rotted and the whole field is now soft to a considerable depth. In this state buffalo ploughs, implements of the most primitive construction, consisting of a short sharp point of wood pressed against the soil, are used for breaking up the lumps of earth which remain. There can be no doubt, however, that the tramping of the huge animals which are tethered to the plough effects far more than the instrument itself in reducing the surface of the field to the consistency of mud. Besides the plough, in the low-country a square board, on which the driver continually jumps, is dragged by buffaloes over the fields for this purpose, and men in the glory of a Sinhalese—mud up to the middle—work it about with scrapers and mamoties to produce an even consistence to the mud, and an even surface to receive the seed. This is sown broadcast, and the green spire generally makes its appearance the second day after. For three days after throwing in the seed no water is turned into the fields, and then for one day only just to keep the ground moist. Whilst the plant is gaining a hold upon the ground, a little water is allowed to flow into the fields, and a gentle supply of water kept on every alternate day during daylight until the paddy has three leaves. After this stage of its growth the water is allowed to flow two days at a time, alternately with two days when no new water is allowed to pass. This process is continued about a month, after which the water is turned on for about ten days at a time, and then stopped for a day or two until it is ripe. The system described applies more particularly to deep swamps; but where the fields are of a dry

nature, immediately the plant has taken well hold of the ground, the supply of water is kept up through the whole period of growth until the harvest is fit for the sickle.

To improve the fertility of their fields by manuring, the natives of Ceylon have but small ideas. Amongst the hills, cattle are pastured upon the stubble, and the straw after threshing is burnt upon the field; but pasturage of cattle, though good for the land, is only done for the purpose of feeding them, and the burning of straw is only done to get rid of what is left after re-thatching their buildings.

In the vicinity of the Kandy road the straw is sold to feed the draught bullocks, of which so many work on that line of communication with the interior. Some of the lands near the Kēlani-ganga, which can be reached by boats from Colombo, are manured with the bones collected in the gravets, but this practice is of very small extent, and has only been adopted within a few years. The system of cultivation by transplanting is sometimes adopted in the low-country. To do this only a few of the ridges which composed the field are sown with more than a double quantity of seed; when the plant is from ten inches to a foot in height, it is taken up and planted in rows in other parts of the field. This labour is generally performed by women, and it is said that the production from a given quantity of land so cultivated is considerably increased in quantity and quality. Wet weather is good for paddy crops, but dry weather is seldom injurious, if the supply of water for irrigation continues good. On the Eastern and Southern sides of Ceylon, where the rains only prevail for a limited period, and are succeeded by dry weather which continues unbroken until the return of the wet season, the crops are rendered somewhat precarious; and the remains of tanks which have been constructed in past ages, shew that a sufficiency of moisture from natural sources to bring their crops to maturity could never be depended upon in that part of the Island. Even on the

secondary ranges at the elevation of 1,700 feet in a South-Easterly direction from the Peak zone, the crops are frequently lost by the streams falling short before the North-East monsoon sets in.

The yield of paddy is various, depending upon soil, climate, and the nature of the soil through which the water for irrigation passes: 48-fold has been produced in many parts of the Mēda Kóralé, whilst in the Kaduwiṭi Kóralé, from two to six-fold only is taken from the land.

There are many superstitions which are observed by the Singhalese in carrying on their cultivations, by inattention to which they would despair of reaping a crop, or fear some misfortune would overtake them. These superstitions mostly have reference to times and seasons for beginning and ending their various occupations, with the view of averting calamity which they believe they might draw upon themselves by not attending to these precautions. They hold it as unfortunate to commence the work of cultivation on the 1st or 2nd day of their month, and after the work is commenced it must be desisted from at certain intervals. Thus, supposing that the work was commenced on the 3rd of the month, it must not continue over the 7th, to be resumed on the 10th, progressing until the 13th, when an interval occurs until the 15th; the cultivation then goes on for seven days, to be discontinued one day and carried on five days, which completes their month. The foregoing describes the order of the observances, but the commencement is always determined by a "lucky day," and consultations with wise men, whose business it is to ascertain the auspicious moments, are never omitted. Priests, though frequently resorted to, are not the only persons in whom the people place confidence as being able to discover the important period. Learned men, so called, who have studied for the purpose, are applied to in such cases, these are chiefly the priests (*Unnānselá*), doctors (*Wedarállá*), and devil-dancers (*Kaṭṭáḍi*.)

Books on lucky days are supposed to have been written before the time of a traditional king named Mahá Sammata Rajjuruwo, whose queen, having become sick from a fright from tigers, was the first person cured by devil-dancing. To this period the origin of many other superstitions is referred. Almost every part of the business of life is undertaken by these simple people upon appointed days; they seem to have a singular dread lest misfortune should follow the neglect of these observances. Lucky days are sought for, for turning and hoeing the fields, sowing, tying fences, reaping and tramping out the grain, also for building the small houses for the people who watch the fields at night, and for tying up white tatties to scare away animals; again, for pounding the paddy and storing in their houses.

When grain is to be tramped or threshed from the straw by the feet of men or buffaloes, a place is selected and a curious ceremony follows. A hole being dug on the spot, a shell filled with the leaves of the Bó tree, the Nika and the Niyagaláwēla, and some Hillock (a long grass) is placed in it, besides a reaping hook, with precious stones, gold and silver, or substitutes for them. These being covered over with earth, a stone is placed above, and three rings are made round them with ashes, after which it is left until the stars appear at night, when it is supposed good luck has now come to the place, and the work must be commenced forthwith, the articles deposited in the ground being in the first place removed. Offerings of grain are sometimes but not invariably made to the priests; in the case of reaping the first fruits of a new field it is never omitted. The custom is to take sufficient rice boiled for a meal and a number of different kinds of cakes made from the flour; of these the holy man must partake before any one would dare to make use of the remainder of the crop.

The fields are seldom cultivated by the owners, most frequently they are given in charge to some one who undertakes

the whole of the labour and expense of the crop. In such a case the owner and the cultivator share equally, the former appointing somebody to be present at the tramping, to see that he is not cheated of his proper share.

The rent or tax payable to the king was one-tenth of the crop; except in the case of *Gamarála* (an obsolete title), who, being obliged to furnish the king's messengers with food when on journeys, were exempted.

Animals committing depredations in the fields are frequently caught in traps or killed by the watchers at night; but it is considered unclean to kill any animal for food in a paddy field. Thus we find every circumstance of life connected with some superstition.

Hill-Paddy.

Hill-paddy, of which there are many kinds, is sown in June. Six months suffice to bring to maturity the following kinds: *Rat-ēlvi*, *Batu-kiri-ēlvi*, *Gonabaru-ēlvi*, *Mudukiri-ēlvi*, *Laina-ēlvi* and *Vaikolla-ēlvi*; whilst *Pallai-ēlvi* grows so rapidly that it ripens in three months. Hill-paddy is never sown more frequently than once a year. It is planted upon land which has been under forest or very full-grown chena for many years, it is so exhausting a crop, or the land is naturally so poor in the ingredients for cereal production, that every crop taken requires newly-cleared land. Artificial manure is never applied; the ashes of the wood fires alone assist the fertility of the soil. Chenas are largely cultivated in the Kuruwiti, Navadun, Kukulu, and Aṭakalan Kórales in the Sabaragamuwa District. The crop of hill-paddy suffers more from drought than the grain cultivated in swamps; indeed any deficiency in the seasonable moisture is sure to result in a total failure of the crops. When the land is moderately good and the season propitious, the return from this cultivation is generally tenfold. The work is generally conducted by the inhabitants of the

village together, who share equally in the produce; the women do their share of the work in weeding and harvesting, also in carrying the brush off the land to be used for firewood. It is computed that the labour of two men in this cultivation will produce sufficient for the subsistence of three persons. Swamp paddy is more prolific and the labor of cultivation easier, the labour of one man being supposed to be sufficient to raise the food of three and often more. The same superstitious ceremonies are observed with reference to the operations as described above.

Kurakhan.

Kurakhan, or Natcherin, is extensively cultivated on chena lands in this District; it is a small seed like brown mustard, which when ground into flour is used in making cakes. The same land will often bear two crops, but most frequently after the first, instead of a second crop of grain, chillies are sown. The cultivation of *kurakhan* is carried on most extensively in Bintenna; there it is said to yield frequently 50-fold. The natives, after the clearing and sowing is completed by the men, consider it degrading for any but the weaker sex to perform the remaining part of the labour, the weeding. The cropping and the threshing, therefore, is performed by cutting the heads from the plant and drying them on mats. When dry and of a bright brown colour, the heads are crushed in a basket or between mats, which soon disengages the small seed, and winnowing in *kulu*, (hand baskets) completes the process. The seed after winnowing and before storing is exposed to the sun in shallow trays, which hardens it. Before threshing or grinding they do not observe any form of divination to discover a happy time to commence the work,—a remarkable exception to the general rule. The cultivation of *kurakhan* is not generally profitable; the return compared with the labour expended will not yield a subsistence. It is only cultivated as an

addition to other productions, and it will grow upon land which is not good enough for hill-paddy. Many different seeds are sown with *kurakkan* and are cropped afterwards ; a few of these are *Muṇ-ṇṇa*, *Kollu*, *Ulundu*, and *Búmé*, all vetches. *Panna* a kind of corn, *Aba* (mustard), *Miris* (chillies), *Asamódagan* (a curry stuff), *Iringu* (Indian corn), *Amu* (small grain), *Mē-kharal* (a kind of bean), *Wambaṭu* (brinjal), with *Kēkiri*, *Tiyambará*, *Alu-puhul*, *Raṭa-puhul*, *Diya-labu*, and *Vētakolu*,—all different kinds of gourds and cucumbers.

Tobacco.

So very little tobacco is cultivated by the natives of Ceylon generally, and in the District of Sabaragamuwa less than in many other parts of the Island, that a very short notice will suffice to describe the simple operations connected with its culture. When it is intended to plant tobacco, cattle are penned upon the ground to manure it, after which the surface is broken up with the mamoty or hoe. After this, at distances of three feet apart every way, holes are dug about eighteen inches wide and as much as two feet deep, which are filled with cow-dung and soil.

In the meantime a nursery of young plants has been prepared, on newly-cleared ground under shade, well manured by the ashes of the burnt chena. When the seedlings have attained the size of three leaves, they are considered best to transplant into the holes ; after which the utmost care is taken of them by shading and watching until the roots have taken firm hold of the ground. From this period until they arrive at maturity, the plants are continually inspected, to remove decaying leaves and insects to which they are very liable. Having attained the height of $2\frac{1}{2}$ feet, the top of the plant is cut off, and it is well earthed up round the roots ; this prevents the plant running rapidly to seed and promotes the growth of the leaves. About three months is sufficient to bring the plant

to its full growth; the leaves are then cut and cured by the simple process of drying them on lines in the house. The quality of tobacco grown in this country is very inferior; it is mostly used for chewing with betel by the natives. One would readily suppose, that every native in the rural districts would produce in the neighbourhood of his dwelling sufficient tobacco for his own consumption, but such is not the case. On the contrary, it is one of those articles which the more enterprising inhabitants of the low-country carry up to the interior to barter for coffee, arekanuts and other produce; this is grown in Jaffna, Chilaw, and a few other places.

Until within the last few years a quantity of tobacco was grown in the elevated districts of Uva in the fine soil of virgin forests. This cultivation has now almost entirely disappeared since the natives have been prevented from encroaching upon the Crown lands. The quality of the Uva tobacco is finer than any other native kinds produced in the country; it is very rich and full-flavored, and from such that cigars and cheroots, equal to the most celebrated sorts, could be made from it. Large quantities were formerly brought down by the tavalams to Ratnapura, and bartered for salt, fish, and cocoanuts; but the trade in this article has almost entirely ceased. Dumbara is also celebrated for the quality of its tobacco, a circumstance doubtless attributable to the limestone formation on which rests a large portion of the soil of that fertile valley.

Tobacco being a lime plant and therefore a crop of the most exhausting nature to the soil, it is not surprising that its cultivation is not persevered with, in a country where the resuscitation of the soil by artificial means is so little understood. The quality of the article produced not only suffers by neglect in this respect, but by the total ignorance of the cultivators how to prepare the green leaf so as to improve and retain its narcotic qualities and those properties for which the article cultivated in the Spanish settlements is so justly celebrated.

In this place, it may be interesting to mention, that an enterprising foreigner has lately established a tobacco plantation at Tangalla, where he has introduced the kinds most in repute in the European markets, and employs a professional man—a Spaniard, I believe—to prepare the leaves and manufacture them into cigars. Those made from tobacco grown from Havannah seed are highly esteemed, and command a ready sale at good prices.

Cocoanuts, &c.

Experience has proved that only in the neighbourhood of the sea, the cocoanut tree grows to perfection; yet it will bear much fruit at any elevation below 2,000 feet. It is therefore extraordinary that the inhabitants generally of the Sabaragamuwa District do not grow sufficient for their own use.

Cocoanuts are still brought in large quantities from the low-country and exchanged for local produce; the tree being seldom met with except surrounding the houses of headmen, and about wihâres. About the station of Ratnapura, on the banks of the Kaluganga, the trees are very numerous, and, interspersed with the elegant bambu, add great beauty to the landscape. Whenever natives intend to plant cocoanuts, they always procure the seednuts from the low-country. The custom appears based upon experience that the tree thus raised bears better than one raised from seed grown on the spot. The young cocoanut plant is not, as in the plantations, sprouted by putting the nut upon the ground and partially burying it in soil, but two nuts being tied together by strips of the husk, are suspended over the branch of a tree until the green shoots break forth, when they are planted in holes. They allege as a reason for adopting this system, that they are safe from the depredations of pigs and also from white ants.

On occasions when jack and cocoanut trees are more particularly cared for, which is when the fruit is upon them, the

natives practise certain ceremonies by which they hope to preserve them from depredation. Having procured a number of young leaves of the cocoanut tree, they proceed to charm them, by laying them on the ground and burning *dummala* (rosin) round them. These leaves they then tie to each of the trees, and they believe that any one who eats of the fruit afterwards without claim to it will die.

If the ceremony is effectual, these leaves must be a very economical police, and might be introduced to protect more valuable property.

Arecanuts.

The trade in arecanuts is so extensive that any notice of the products of Sabaragamuwa would be incomplete without such description as the subject will admit of. The beautiful palm which produces the nuts grows to great perfection in this District; it delights in shady and moist places. Except around my own bungalow I never saw it cultivated, but wherever there are a few trees and the locality is favourable, they increase largely by the droppings, and thus have been formed the beautiful groups of this tree, which break the sameness of the scenery. They are collected in large quantities by Moormen, who send them in boatloads to Colombo, whence they are shipped to the coast and to the Maldives.

Betel.

These leaves, the produce of a kind of pepper vine, are not grown in quantities as in the low country to supply the markets, but in all the gardens; the plant is trained upon the jack trees, and supplies the wants of those belonging to the family. In the neighbourhood of towns, betel is trained upon sticks, and patches of ground to the extent of an acre are cultivated entirely with it. The women collect the leaves, packing them carefully in baskets, and take them to market.

All offerings of money to temples must be presented in a betel leaf. On the fence of a betel garden, a chatty painted black with white spots is frequently exposed, to scare away evil spirits. This superstition is not confined to betel plantations.

Cardamoms.

Cardamoms are not cultivated, but they are found in small quantities in most situations in the jungles. They are most plentiful about Gilimalé at the base of the mountains on the road to Adam's Peak from Ratnapura. They are frequently used green to chew instead of betel leaf.

Talipot palm.

These wonderful trees grow in great numbers about the villages in Sabaragamuwa, and like the other trees which from the beautiful groups about the houses, owe little to the care of man. When jungle is cut for sowing fine grain they are always left. Every native carries a strip of the leaf to shelter him from the sun and rain. When dried and sewed together, four pieces of leaves which may be carried by one man make an excellent portable tent, when placed on sticks cut from the neighbouring jungle. They are much used by the drivers of bullock tavalams, when they stop for the night; the pack saddles are built into a square heap and protected from the weather by talipots placed at the top. Temple headmen and Raṭemahatmayas when they travel are always followed by talipot bearers; the leaves for this purpose are generally sewn at the edges and inlaid with talc and colours. All kinds of temporary buildings are thatched with talipots; they are also used as a waterproof covering for loads carried in baskets. It would be almost impossible to describe the many uses to which they are applied by the natives.

Jack tree.

This valuable tree is seldom planted, but springs up from seed which have been scattered by accident around the dwellings of the natives. The seeds, and pulp in which they are contained within the fruit, are much used as food. The timber is perhaps the most useful grown on the Island, being adopted for every purpose : if cut young it is apt to be quickly worm-eaten. Beneath its shade the coffee tree grows luxuriantly, manured by offal from the houses, and not pruned down into heavy bearing.

Coffee tree.

The coffee bush in the upper part of this District attains to an extraordinary size ; in the Adigar's garden at Balan-goda there are several specimens of the thickness of a man's thigh. In several parts of the District plantations have been formed after the manner of cultivation practised by Europeans, and the small patches of coffee invariably found about the houses have been increased by planting. The produce is picked and very imperfectly prepared by the women and children, and is sold to the Moormen, who collect it principally in exchange for salt. The low price now obtained for it has almost annihilated the large trade in the article which was formerly carried on in Sabaragamuwa ; the cost of cultivation and transport are not covered by the Colombo price. The coffee is still picked and stored, literally costing nothing, and vast quantities will be poured in whenever the price rises high enough to remunerate the industrious Moormen and Chetties who collect it. The quantity produced annually in this District is stated in the official returns for 1844 at 32,410 bushels, or about 15,000 cwt. I believe this is underrated.

Jaggery palm.

Besides the Areca and Talipot palm, the Kitul or Jaggery palm is almost invariably found about the villages.

I have reason to believe it is never planted, but is sown by seeds being scattered by animals. This tree is seldom found in forests at an elevation exceeding 3,000 feet, and grows in steep places. It is much cut down by the natives, and when the inner pith is removed it is used for spouts to conduct the waters for irrigation, and from the roofs of their houses. The wood, which is particularly hard, appears as if it were composed of large dark fibers twisted together; it is much used to peg together the beams used in building; also as a substitute for iron as bars to windows, and for paddy pounders. But the chief use of the Kitul tree is to draw the toddy from it. The manner in which this is done is curious: as soon as the bud or spike appears, it is cut off within three inches of the stalk, and an incision made in which a mixture of limes, salt, black pepper, and garlick is put and tied up very tight. This is left for three days, after which it is removed and the bud again cut; the toddy will now flow into a chatty placed to receive it: the liquor may be taken from a tree in this way for several months at a time. It is remarkable that a tree which has been continually tapped for many years produces the hardest wood, the wood of the wild tree growing in the jungle being comparatively soft and spongy. Toddy when freshly drawn from the tree is sweet to the taste, and possesses all the properties of cane juice; after being boiled and the watery particles evaporated from it several times, it crystallises into a coarse sugar, capable of being refined into a superior article. After standing twenty-four hours toddy begins to ferment, and acquires an intoxicating quality; in this state it is called *rá*, and much of it is clandestinely consumed. I use this term because the arrack renter of the District has the power of levying a fine upon those who use it—a power too frequently and vexatiously exercised.

The *Goraka*, or Gamboge tree, produces a pulpy fruit

which the natives dry in the sun after cutting it in pieces, and use it to impart a powerful acid flavour to their curries. The *Kekuna* and several other trees produce seeds from which they express oil for anointing their bodies and lighting their dwellings. The primitive mode of obtaining the oil is by compressing the seeds previously put into a mat bag between two parallel bars of wood, and catching the oil as it flows into a chatty placed beneath.

Cattle.

Besides buffaloes, which are used in the cultivation of their paddy fields, a great many other horned cattle are bred in this District. The bullocks are chiefly hired by the Moormen tavalam keepers, who at certain periods of the year carry to the low country various articles of produce, which they have collected, and bring up salt, cocoanuts, fish, &c., for their bartering trade; others are purchased for the bandy traffic of Colombo, and the Galle and Kandy roads. The numbers of cattle do not increase rapidly; little attention is paid to them, their food is only what the uncultivated hills supply, with the occasional improvement of what may be found in the stubble fields. I have no doubt that were the natives more energetic, the number of cattle might soon be doubled. They are extremely afraid of misfortunes occurring to their cattle through the agency of evil spirits. To prevent this, once a year they procure a quantity of ripe plantains, which must be grown by the owner of the cattle, and place them with a dish of boiled rice on a small platform made for the purpose in the *maduna* (grain store) attached to their houses. A devil dancer (*Kattādiyā*), who has been previously engaged, then approaches and summons all the devils to appear to him; he then falls to and eats as much as he pleases of the rice and plantains, and informs his employers that no harm will happen to their cattle during the ensuing year. The ceremony is concluded with the beating of

tom-toms and dancing. When bullocks are to be castrated, branded with the owner's name, or trained to carry loads, the wise men are invariably consulted to name a lucky day—otherwise they apprehend the animals would die under the operation ; and they frequently do so from the effects, nevertheless.

Houses.

The comfort of a dwelling must be estimated by the supposed wants of the inhabitants. Judging by this standard, the people of Ceylon—and of Sabaragamuwa in particular—appear to be, as the saying is, pretty well-to-do in the world. Their wants are few, and in describing the manner in which their cultivations are conducted, I have shown that they are easily supplied. In Sabaragamuwa the mode of building rooms to form the four sides of a small quadrangle, as in the Kandyan country, is not generally adopted ; but the houses generally consist of three rooms side by side under one roof, with the *maduwa* or grainstore, generally a shed open on one side, placed at right angles at one end. In the Kandyan country paddy is frequently stored, in a round place elevated by single stones from the ground, in the manner ricks are preserved from vermin at home, and for the same purpose. This is built of wattled sticks and plastered with clay and cowdung inside and out, and thatched ; it is seldom larger than a full sized water-butt.

It may not be generally known that there are owners of paddy lands in this country called paddy-misers. These unhappy persons, like the hoarders of coin, live penuriously in the midst of plenty ; they store up the produce of season after season, they cannot consume it, they will not sell it, or part with it to any one, it therefore perishes. Who shall say the miser is not a monomaniac ?

The superstitions of the natives respecting their dwellings are various. For putting in the posts, thatching, and light-

ing the first fire, lucky days must be consulted for. They consider it unlucky to build their houses from north to south, or *vice versa*, as these points are called *gini kona* which means "fire end." They have the idea, that persons living in houses so placed will be continually fighting with each other, and subject to all kinds of sickness, and the house itself will be sure to be burnt down. Sometimes a man and his family will desert a house they have inhabited all their lives, from the fear of devils. In this way they practise greatly upon the credulity of each other, frequently hiding near the house and pelting the roof with pebbles after dark, which, under the belief in the agency of evil spirits, causes the inmates to abandon their habitation. A death in the family not unfrequently causes them to abandon a dwelling in which the family have resided many years.

Frequently in taking up their lodging in one of the temporary buildings erected on clearings for *kurakkan*, they will strip the bark from the nearest trees of the standing forest in order to arrest the progress of the demons from whom they fear molestation.

Many of the peaked mountains of this district have given rise to legendary fictions, which still exercise an influence upon the natives. The story mentioned in Major Forbes's account of a journey from the Wilson plains to Balangoda is still believed. The breaks in the Pettigala range of mountains which form an important feature in the view in descending from the zone to the romantic village of Galagama, are ascribed to the arrows of Ráma. The mountain itself,—at least the upper part of it, is called "God's garden," and they believe misfortune will overtake any who presumes to fell the forest for cultivation. This superstition gave rise to much inconvenience to the Europeans who commenced clearing the land for coffee cultivation, every

cut finger, every blow from the branch of a tree, was looked upon as evidence of the Deity's displeasure. To the effect of this superstition I am inclined to ascribe the circumstance that the upper part of Pettigala, though surrounded by well populated valleys, was one of the few hills in the District which was covered with an original growth of forest, until purchased by Europeans for coffee cultivation. The superstitions respecting this mountain have doubtless been kept in remembrance by the eremite priests who live in the caves at its base.

Perhaps there is no District in which the priesthood is more numerous, or where their influence is more felt than in Sabaragamuwa. It is not my intention to diverge into a consideration of their religious observances; but the various superstitions which I have briefly glanced at, show that their sentiments partake more of fear than of hope. Instead of looking for the protection of a supreme and beneficent Being, they seek to avert by propitiation the misfortunes which they believe the spirits of evil have power to inflict.

This Paper has far exceeded in length the few remarks I intended to offer, the subject affording much greater scope for description and remark than I supposed at the commencement. Extended as these Notes appear to be, I feel that they are greatly curtailed of the amplification the subject would admit of; and those who take a pleasure in observing the manners and customs of a primitive people, will look for many more particulars than I have given.

SKETCHES IN THE NATURAL HISTORY
OF CEYLON.

BY EDGAR L. LAYARD, ESQ., C.M.E.S.

(Read 4th November, 1848.)

IN offering to the Society the accompanying Sketch on the Genus *Papilio* inhabiting Ceylon, I beg to make such few observations as will explain the plan which I propose to pursue, should my essay be deemed worthy of a place in the Society's Journal.

Little or nothing exists on the spot to show the progress that has been made in the investigation of the Fauna of the Island. I therefore propose to enumerate, from time to time, the various indigenous species of Insects, Birds, &c., giving a description of such as are new, briefly stating their locality, season of appearance, food, and any other peculiarities which may be interesting. In my text I shall follow, as closely as may be, the example of men of note who have pursued the same course, such as Hodgson, Sykes, Blyth, and many others, whom, though I cannot equal, I may at least follow. For the correctness of facts stated, I will vouch; for the correctness of the identification of species I cannot; although, to guard against mistakes to the utmost of my power, I will submit my specimens to the scrutiny of those who have the power of referring to the vast collections in England and India, and also to books, of which no Library in the Island possesses a single volume on Oriental Entomology or (with the exception of the Bengal Asiatic Society's Journal) Ornithology.

I had the honour some time since of reading before this Society a Paper on "Collecting and Rearing Lepidoptera

with a list of our indigenous Butterflies," and I purpose that the Entomological portion of these sketches shall in a manner constitute a continuation of that Paper.

ORDO. LEPIDOPTERA.

SECTIO. DIURNA.

Genus. Papilio.

This genus contains most of our largest diurnal Lepidoptera, two or three species measuring upwards of six inches in expanse. It is distributed over the whole of the Island, one species or another being found everywhere. Of all at present known, but one has the hind or inferior wings, terminating in long slender sharp pointed tails; eight have moderately lengthened tails, broad and spatulate; three have the tail still less produced and spatulate, gradually approaching the remaining three, in which the tail is altogether obsolete.

The Aurelia are attached to a branch by the tail, and a band round the middle; the head but little inclined, except in a few instances, which shall be noticed under the species in which they occur.

The larvæ are naked, and furnished with a fleshy, furcate tentacle, on the shoulder as it were, which they have the power of protruding and retracting. It is moistened with a strong scented fluid, and is, I believe, a means of defence against its parasitic enemies, the Ichneumon flies, which deposit their eggs in the living caterpillar; if the larvæ is touched the tentacle is rapidly thrust out, and struck on the irritating object. I observe that all the Papilionidæ whose metamorphoses I have followed feed on aromatic plants, such as the Citron. May not the juices of these plants supply the scented fluid alluded to?

The eggs present under the microscope a variety of singular forms, and the succession of changes from them to

the perfect fly is generally effected in from fifteen to thirty days.

P. Haliphron, var. This is a distinct species from the true *Haliphron* which is found in Celebes. The larva feeds on the *Aristolochia Indica* (Linn.), *sassanda* of the natives. The perfect insect is common and widely distributed, except in the peninsula of Jaffna, where, according to the Reverend F. Taylor, it is not found. I do not remember seeing it myself during either of the two visits I have made there at different seasons of the year.

P. Polymnestor. A common and widely distributed insect, though rare in Jaffna. The larvæ feed on different kinds of Citrus, the perfect fly appearing plentifully in May.

P. Epius. Agreeing in all respects with the last, except that the dingy variety is rather scarce.

P. Helenus. Not uncommon in the interior, at an elevation of about 3,540 feet. Larva unknown.

P. Polydorus. Very common and widely spread; larva feeds on *Aristolochia Indica* (Linn.). Fly abundant in May and June.

P. Pammon. As the last, with the exception of the larva, which feeds on Citrus.

P. Hector. Common in July and widely distributed, larva closely resembles that of *Polydorus*, and often found feeding in company with it.

P. Mutius. Not common; larva feeds on Citrus. The perfect fly appears in September.

P. Polytes. Uncommon; I have only captured about a dozen specimens, and those in the month of June. It does not appear to extend to the hills. The larva is unknown to me.

P. Crino (Fabricius). This splendid insect is very periodical in its appearance, May being the season in which it is found in any abundance. It is then common, flying swiftly, and

generally in one direction, according to the wind. I never could detect a perfect fly alighting or hovering over flowers and shrubs, either for the purpose of feeding or depositing its ova; the larva is also unknown to me. The specimens taken in the neighbourhood of Colombo have the green band unbroken throughout their whole extent; those taken on the Western Coast have the band passing into the discoidal cell; while those from the interior have the band outside the cell, but very broken and interrupted. Can these be distinct varieties?

P. Sarpedon. A very common insect. Time of appearance, May and June. Larvæ feed on Cinnamon.

P. Eurypilus. Nearly allied to the preceding, but confined to the hills, and not common. I never met with the larva.

P. Agamemnon. Belonging to the same group as the two former; larva feeds on the Soursop. The perfect insect met with frequently in June and July. The pupæ of this, *Sarpedon*, and I presume of *Eurypilus*, are attached to the underside of leaves, almost horizontally, thus differing from the foregoing species.

P. Dissimilis. This approaches closely to the genus *Danaïs* or *Euplœa*, in the appearance of the perfect fly; the Larva is also furnished with spines. It feeds on the Cinnamon, and is common in April, the mature insects being developed in May. The pupa wants the knobs found on those of the other Papilionidæ, and resembles a piece of burnt stick; the foundation and suspending silk is black, being the only instance of that colour I have yet seen among the various silks spun by insects.

Papilio Birchii (Layard). This splendid, and hitherto rare, insect has been lately captured in some abundance by the Rev. W. Symons in the Kotmalé range. The first two specimens, from which the accompanying description was

taken, were presented to me by Woodford Birch, Esq., and taken by him at Kitulgala in the Ambagamuwa range.

Expanse of wing, about five inches : depth, two and a-half ; superior wing, velvet black, with a whitish uneven triangle extending over three parts of the surface towards the exterior margin, broken and crossed by the nerves which are black : inferior wings also velvety black, with a white centre as in *Polydorus*, but extending higher into the discoidal cell ; round the exterior margin are five narrow reddish lunules ; tails long and spatulate. Larvæ unknown. The perfect fly is on the wing in the months of March and April, frequenting shady roads and open spaces in the jungle. It is very wary, and flies with great rapidity on being alarmed.

P. Marianna (Layard). This lovely and graceful insect was first observed by me at Kitulgala, between Ambagamuwa and Yatiyantota. It is the only instance we have in this country of that group of Papilionidæ termed by collectors "small tails ;" as a specimen also it is unique, and I am indebted to the liberality of Woodford Birch, Esq., for its possession.

Wings, from three inches to three and a-quarter in expanse ; from shoulder to end of tail two inches two lines ; length of tail nine lines. Ground colour, greenish white : superior wings with seven black bands varying from about one to one and a half lines apart ; the first, about one and half lines from the shoulder extending from the anterior to the interior margin ; the second rather beyond the anal nerve ; the third, fourth and fifth, across the discoidal cell ; the sixth into the anal area ; and the seventh occupying the whole border of the exterior margin, from the apical to the anal angle. Inferior wings with a series of black marginal lunules, the second and third extended down the tail, which is slender and pointed : a black patch crosses the discoidal cell near the scutellar angle, and the marginal lunules are surmounted

by similarly coloured wavy marks. The underside of the superior wing is the same as the upper, but that of the lower wing is marked with several dots and long stripes, which appear faintly through on the upper surface. A black line runs down the centre of the body from the base of the antennæ to the end of the abdomen; two lateral lines, springing from the base of the wings, terminate in a similar way.

The perfect insects frequent moist glades in the jungle, alighting on the edges of the streams and drinking, in which act this specimen was captured. Larvæ unknown.

A CATALOGUE OF BOOKS IN THE TAMIL
LANGUAGE, WITH THE NAMES OF THE AUTHORS,
THE SUBJECTS, AND THE DATES, AS FAR AS
THEY CAN BE ASCERTAINED.

BY SIMON CASIE CHETTY, ESQ., C.M.R.A.S.

(Read June 3, 1848, and February 24, 1849.)

SECTION 1.—PHILOLOGY.

1. *Akattiyam*.

A GRAMMAR, so called from *Akattiyaṇ* or *Agastya*, the reputed inventor of the Tamil Language. Who the author of this work was is not certain ; some regard it as the genuine composition of *Agastya* himself, whilst others maintain that it was written by another person under his name, long after his time. It is, however, not the less esteemed among the literati of the south of India, and is generally consulted by them as a standard work.

2. *Tolkáppiyam*.

Another grammar, the oldest now in existence. It is divided into three parts, comprising 1,276 *sutras*, or aphorisms, in verse ; but it is written in so abstruse and difficult a style that few can understand it. The author is called from the title of his work *Tolkáppiyaṇ*, but his real name was *Tiraṇatú mákkinī*, and he is said to have lived at *Tolkáppiyakkudi*, a village situated to the south of Madura. A tradition states that he was a disciple of *Agastya*, and having quarrelled with him composed the present work, with a view of supplanting the one written by his master.

3. *Nannūl.*

Another Grammar, written by a *Jaina* ascetic, named *Pavananti*, and inscribed to the king *Chéyakankan*, who is conjectured to have reigned at Madura about 800 years ago. The author had proposed to treat of his subject under five different heads, viz., Letters, Words, Composition, Versification, and Embellishment; but having died before he had completed his design, the work comprises only the first two heads.

4. *Virasóliyam.*

Another Grammar, so called from *Virasóliyam*, by whom it was written. It chiefly treats of Orthography and Etymology, as also of the rules of Versification, and is probably of the same date as the preceding work.

5. *Néminátam.*

A treatise on Orthography and Etymology: by *Kuṇavira Paṇḍitaṇ*.

6. *Kárikai.*

A treatise on Versification, by a *Jaina* ascetic, named *Amirtasákaraṇ*, or "the sea of Nectar," who flourished some time after *Pavananti*. This work is, however, considered very obscure, in a great measure to the studied brevity of the style employed: hence the proverb "Better live by beating the *Périkai* (kettle drum) than by writing verses by studying the *Kárikai*."

7. *Taṇḍiyalaṅkaram.*8. *Máraṇalaṅkaram.*

Two different treatises on Rhetoric: one by *Taṇḍi A'siriyaṇ* and the other by *Máraṇ*.

9. *Irāiyaṇār Akapporul.*

A treatise on the choice of subjects for amatory poems, consisting of a series of rules and examples, written by

Iraiyaṇār, the head professor of the ancient Tamil University at Madura. The title *Irai*, or *Iraiyaṇār*, being also applicable to *Siva*, his votaries believe it to have been revealed by him directly to the University.

10. *Nampi Akapporul*.

A treatise on the Composition of Amatory Poems : by *Nārkavirácha Nampi*.

11. *Purapporul*.

A treatise on the Composition of War-chants or Moral Verses.

12. *Kuvalayaṇantam*.

A treatise on Grammar and Rhetoric.

13. *Yápparuṅkalam*.

14. *Chaṅkayáppu*.

Two different treatises on Prosody and Versification : by two different authors.

15. *Aṇiyiyal*.

A treatise on Rhetorical Figures.

16. *Cheyiyuliyal*.

17. *Kavichákaram*.

18. *Pirapanta-típam*.

19. *Ariyaviti*.

20. *Pirayóka-vivékam*.

Different treatises by different authors, containing rules for the construction of various kinds of poems.

21. *Pañchalakhana Pirayókappayaṇ*.

A treatise on Grammar in all its parts, consisting of a series of 1,000 verses, written by *Kallaren*.

22. *Chitampara Páḍḍiyal*.

23. *Champanta Páḍḍiyal*.

40. *Tivákaram.*

Another vocabulary, similar in character to the preceding, but much more copious, and consisting of 2,386 couplets. The author, *Chéntan*, was a native of *Ampal*, a village situated on the banks of the *Kávéri*. Some place him in the thirteenth century, but we have no authentic data to determine it.

41. *Piṅkalantai.*

Another vocabulary, so called from its author *Piṅkalan*, a distinguished *Chaiva* ascetic. Its arrangement is the same as the *Tivákaram*, and it serves in a great measure to supply the deficiencies of that work.

42. *E'kapata Nikaṇḍu.*43. *Kayákara Nikaṇḍu.*44. *Irévaṇachittar Chüttiram.*

Different vocabularies by different authors, but none of them in general use.

45. *Auvai Nikaṇḍu.*

Synonyma of Plants : by *Auvaiyár*, the celebrated Tamil poetess, who flourished in the ninth century.

46. *Potiya Nikaṇḍu.*

Another, like the preceding, but by a different author.

47. *Chūdāmaṇi Nikaṇḍu.*

A vocabulary, arranged under twelve heads, and consisting of more than 1,200 stanzas. The author, *Vira Maṇḍalavan*, was a *Chaiṇa* king ; but neither the name of his kingdom nor the chronology of his reign is known. His work, however, is posterior to the *Tivákaram* and the *Piṅkalantai*, since he notices them both in his introductory stanzas.

48. *A'chiriya Nikaṇḍu.*

Another vocabulary, so called from the verses being composed throughout in the *A'chiriya* metre. It follows

very closely the former, both in the matter and in the arrangement, and is said to have been written by *Aṇḍip-pulavar*, of *Uṭṭaṅkál*.

For the following, the Tamils are indebted to European writers :—

1. *Toṇṇál Viḷakkam*.

An exposition of the rules of Grammar, including Poetry, written by the Rev. Father C. J. Beschi, otherwise called *Vīramāmuni*, or “The Great Champion Devotee.” It is divided into five chapters, comprising 829 *chúttirams*, each of which has a series of examples from classical authorities appended to it. The assembly of Tamil poets, to whose criticism it was submitted by the author, duly appreciating its merits, is said to have conferred on it the title of *Terut-kuru*, or “The Intellectual Monitor,” and it is doubtless the best work on Grammar now extant in the Tamil language.

2. *Grammatica Damulica* : a Tamil Grammar, in Latin : by the Rev. B. Zeigenbalg, Halle, 1716.

3. A Grammar of the Common Dialect of the Tamil Language, termed *Koḍun Tamil*, in Latin : by the Rev. Father C. J. Beschi, 1729.

4. A Grammar of the High Dialect of the Tamil Language, termed *Chen Tamil*, in Latin : by the Rev. Father C. J. Beschi, 1730.

5. A Grammar of the Tamil Language : Vepery, 1789.

6. A translation of Beschi’s *Koḍun Tamil* Grammar into English : by the Rev. G. H. Horst, Vepery, 1806.

7. A translation of Beschi’s *Chen Tamil* Grammar into English : by B. G. Babington, Esq., Madras, 1822.

8. A Tamil Grammar in English : by the Rev. R. Anderson, London, 1821.

9. Another, similar : by the Rev. C. T. E. Rhenius, Madras, 1836.

10. An abridgment of the same : Madras, 1845.

10. An abridgment of the Latin Grammar in Tamil : Pondicherry, 1845.

11. An abridgment of the French Grammar in Tamil : Pondicherry, 1845.

12. An abridgment of Murray's English Grammar in Tamil : Madras, 1828.

14. *Chatur Akarāti.*

A Tamil Dictionary, compiled by the Rev. Father C. J. Beschi, in 1732, and so called from its consisting of four (*chatur*) distinct parts, the first of which exhibits all the words of different significations ; the second, the words of the same significations ; the third, all the collective nouns or generic words ; and the fourth, the different words which rhyme together.

15. A Dictionary, Tamil and Latin : by the same author.

16. A Dictionary, Tamil and Portuguese : by the same author.

17. A Dictionary of the Malabar (Tamil) Language : by the Rev. B. Ziegenbalg, Halle, 1716.

18. A Dictionary, Tamil and French : by the Rev. Father Du Bourges, formerly of Madras.

19. A Dictionary, Latin and Tamil : by the Rev. Father D. Magny.

20. A Dictionary, French and Tamil, and Tamil and French : by Lieutenant A. Blain, of the 4th Regt. Infantry, Pondicherry, Paris, 1831.

21. A Dictionary, English and Tamil : by the Rev. T. Fabricius.

22. A Dictionary, Tamil and English : by the same author.

23. A Dictionary, Tamil and English : by the Rev. J. P. Rottler, Madras, 1834-41.

24. A Manual Dictionary of the Tamil Language : Jaffna, 1842. This work contains about 58,500 words, being

nearly four times as many as are found in the whole of the *Chatur Aharāti*.

25. Manual Lexicon, English and Tamil, giving in Tamil all important English words, and the use of many in phrases : by the Rev. J. Knight and the Rev. R. Spaulding, Madras, 1844.

26. A Dictionary, Latin, French, and Tamil : Pondicherry, 1846.

SECTION II.—MYTHOLOGY, HISTORY, AND BIOGRAPHY.

1. *Irāmāyaṇam*.

A poem in seven books, which are again divided into 128 cantos, comprising 12,016 stanzas. It narrates the adventures of *Rāma*, the conqueror of Ceylon, as told originally by the sage *Vālmiki* in Sanskrit, but with far greater poetical embellishments. The author, *Kampan*, has left nothing on record respecting his personal history, except that he was a native of *Tiruvāḷuntūr* in the Tanjore country, and undertook and finished his voluminous composition under the patronage of *Chadaiyaṇ*, a wealthy farmer of *Veṇṇeynellūr*, in the year of *Chaka* 808 (886 A.D.). A tradition, however, is current that he enjoyed high favour at the court of *Kulóttuṅka Chóla*, and was honoured by that king with the title of *Kavichchakkaravartti*, or "Prince of Poets," but that proving himself inconsolable at the death of his son *Ampikápati*, who was impaled alive for an attempt to seduce the king's daughter, he incurred the royal displeasure, and eventually perished by the hand of the executioner.

2. *Kanta Purāṇam*.

This poem, like the preceding, consists of seven books, but is divided into 141 cantos, and contains 10,305 stanzas. It has for its subject principally the conflict between the demons and the gods, and the final overthrow of the former

by the latter, under the conduct of *Skanta*, who sprang from the frontal eye of *Siva*; but treats of every legend connected with Hinduism, and likewise has a canto called *Anḍakócha Paḍalam*, exclusively devoted to a description of the different systems of world, and of their relative magnitudes and distances, and the causes of eclipses of the sun and moon, as revealed by *Chukkirāṇ*, the préceptor of the demons to their king *Chūraṇ*. Its author, *Kachchiyappar*, was a Brahman of *Kañchipuram* (Conjeveram), in the Carnatic; and Mr. Roberts, in his "Oriental Illustrations of the Sacred Scriptures," p. 3, supposes that it may have been written 1,500 years ago; but this supposition is evidently a mistake, as some of the personages whose names occur in the introductory stanzas appeared to have lived not earlier than the tenth or eleventh century.

3. *Páratam*.

A poem in 50 cantos, comprising 4,288 stanzas. Treats of the ancestry of the *Pándavar* and *Kauravar* princes, and of the great battle which was fought between them near Delhi, in consequence of the latter having dispossessed the former of their kingdom by a device. The author, *Viliputtúr A'lvár*, was a chief of the *Vaishnavas* at *Chaṇiyúr*, in the Carnatic, and it is believed that he wrote his work by desire of the king *Karikála Chólaṇ*, whose installation is dated 465 A.D.

4. *Iraku Vaṅkisham*.

A poem in 26 cantos, comprising 2,444 stanzas. Treats of the history of *Ráma's* ancestors from *Iraku* and of that of *Ráma* himself. It is an imitation from *Kálitácha's* Sanskrit work under the same title: by *Arachakéchari*, brother of *Pararácha Chékarāṇ*, king of Jaffna.

5. *Naiḍatam*.

A poem in 28 cantos, comprising 1,171 stanzas. Treats of

the adventures of *Nalan*, king of *Nishata*, and *Tamayanti*, his consort. This work was composed by no less a personage than the king *Ativira Ráma Pándiyan*, who reigned at Madura about the middle of the eleventh century, and Mr. Ellis in noticing it in his commentary on the *Kural*, p. 163, observes that "its high and courteous tone, notwithstanding the frequent occurrence of those gaudy images and far-sought allusions which European taste will denominate conceits, is worthy of the princely author."

6. *Nala Venpá.*

A poem in 3 cantos, comprising 418 stanzas of the species called *venpá*. Treats of the same subject as the last, but with a studied brevity. The author, *Pukalénti*, was a contemporary of *Kampan*, and, like him, attached to the court of the king *Kulótunka Chólan*.

7. *Chintámani.*

A poem in 10 cantos, comprising 3,315 stanzas. "The queen *Vichaiyai*, the mother of *Chivakan*, the hero of the poem, was forced to fly, while far gone with child of him, from the field of battle in which the king her husband *Chachchantan* was slain by his rebellious minister, and was overtaken by the pains of labour in a burning ground. Here she was compelled to abandon her new-born infant, who was found and brought up by a man of the Vaisya caste. The mother took refuge with a society of holy virgins in the wilderness, where she was discovered at length by her son, after he had arrived at a mature age, and had acquired great renown by many glorious achievements." Ellis' *Kural*, p. 260. The author's name is not mentioned, but he describes himself as a *Chaina* sage.

8. *Chilappatikáram.*

This poem treats of the adventures of a *Cheddi*, named *Kóvalan*, who was put to death at Madura on a false charge

of having stolen a *Chilampu*, or foot-ring, belonging to the king. It is written in a very high style in illustration of the rules of Tamil prosody, but the author and the date are both unknown.

9. *Periya Purāṇam*.

A poem in 56 cantos, comprising 4,000 stanzas. Recounts the devotion and marvellous actions of the sixty-three *Toṇḍars*, or special votaries of *Siva*, including the king *Maṇu Niti Chólaṇ*, who is said to have put his only son to death for driving over and killing a calf accidentally in the street of *Tiruvalūntūr*. By *Chékkilār*.

10. *Tiruvilaiyādal Purāṇam*.

A poem in 72 cantos, comprising 3,362 stanzas. Gives an account of the sixty-four sports of *Siva* in his character as *Chuntarésvarar* at *Madura*, as also of the *Pāṇḍiya* kings in whose reigns they occurred. Though replete with absurdities, it contains some fragments of real history, especially in relation to the contest between the *Chaivas* and *Buddhists*, and the extirpation of the latter by the former under the government of *Kuṇa Pāṇḍiyaṇ*. The author, *Parañchóti Tampirāṇ*, was a *Chaiva* ascetic, who flourished in the middle of the eleventh century.

An analysis of this poem has been published by the Rev. W. Taylor, in his "Oriental Historical Manuscripts," Vol. I.

11. *Tiruvátavúr Purāṇam*.

A poem in 7 cantos, comprising 545 stanzas. Treats of the history of *Tiruvátavúrar*, otherwise called *Mānikkavāchakar*, who was prime minister to the king *Arimarttaṇa Pāṇḍiyaṇ* at *Maturai*, and afterwards, adopting the life of an ascetic, retired to *Chitamparam*, and there distinguished himself by defeating the *Buddhists* of *Ceylon* in controversy, and converting them to the *Chaiva* religion.

The sixth canto of this poem has been translated by me

into English, and published with Notes in the Society's Journal for 1846.

12. *Arichchantira Purāṇam.*

A poem in 10 cantos, comprising 1,212 stanzas. Describes the adventures of the king *Arichchantiraṇ*, or *Harischandra*, who was subjected to many trials and afflictions, and lost his kingdom as well as his wife and son, and became himself sold as a slave to a *Paraiyaṇ*; but was finally restored to his former prosperity. The author, *Virakavirāyaṇ*, represents himself as a poet of *Nallūr*, and to have recited his work before the assembly of the learned critics at Maturai, in the year of *Chaka* 1446, or 1524 A.D.

13. *Valaivichu Purāṇam.*

This poem treats of the legend of *Parvatī* as the daughter of *Tiriyampakaṇ*, king of the Parawas, and *Varuṇa Valli*, his consort, under the name of *Tiraichér Maḍantai*.

An abstract of this poem has been given by me in my remarks on the origin and history of the *Paramas*. Vide Journal of the Royal Asiatic Society, vol. IV.

14. *Kāchi Kāṇḍam.*

A poem in 101 cantos, comprising 2,529 stanzas. Treats of the holy city of *Kāchi* or Benares, as also of the prescribed observances of men and women in different conditions of life, and of the atonements appointed for various sins. The author is the same as that of No. 5.

15. *Iliṅka Purāṇam.*

A poem treating of the origin of the different *iliṅkas* of *Siva*, and of the merits of the worship offered to them, illustrated by sundry legends.

16. *Chevvanti Purāṇam.*

A poem in 12 cantos. Treats of the submersion of *Uṇaiyūr*, the capital of the king *Parantaka Chōla*, by a shower of

earth, as a punishment for his having forcibly taken from the sage *Chadaimuni* some *chevanti* flowers, which the latter had reared for offering at the shrine of *Siva* at Trichinopoly.

17. *Vichuva Purāṇam*.

Legends of *Vichuva Karmá*, the Hindú *Vulcan*.

18. *Chittira Purāṇam*.

Legends of *Chitrāgupta*, the Register of *Yama*, the god of death.

19. *Valliyammaṇ Purāṇam*.

A poem treating of the loves and marriage of *Shanda* with *Valli*, who was brought up by the *Vēdas* in the wood.

20. *Virachinkátana Purāṇam*.

A poem treating of the legend of *Cháran̄ka Tévar*, of *Kumpakóṇam*: by *Vélaiya Chuvámi*.

The following poems, from No. 21 to 41, are styled *Sthalla Purāṇas*, as they have for their subjects chiefly the origin and sanctity of the different *stalam*s, or places of Hindú worship in India. Mr. Ellis, in his tract on *Mirasi Rights*, speaking of these poems, observes that "after passing the fables of mythological periods, with which they usually commence, and gaining the bounds of rational chronology, they contain much of what may be considered as the real history of the country, though still obscured occasionally by allegory and distorted by extravagance."

21. *Arunáchala Purāṇam*.

A poem in 12 cantos, comprising 586 stanzas. Treats of the shrine of *Siva* at *Arunáchalam*, or *Tiruvannámalai*, in the Carnatic, where, when *Brahma* and *Vishnu* contended for superiority, he is said to have sprung up before them in the form of a fiery pillar, entirely passing through all worlds, and told them that whoever succeeded in finding his summit or base should be the greatest, which neither of them was

able to do, notwithstanding the one assuming the shape of a swan ascended to the region of immensity, and the other, transforming himself into a boar, dug through the earth with his tusks, and descended into the abyss. The author's name is *Ellappa*, but the date is unknown.

22. *Viruttáchala Puráṇam.*

This poem is also termed *Tirumaḍukkunṛa Puráṇam*. It consists of 434 stanzas, distributed into 18 cantos, and treats of the shrine of *Siva* at *Viruttáchalam*, a hill-town to the south of Madras. The author and the date are both unknown.

23. *Tiruchchentúr Puráṇam.*

A poem in 18 cantos, comprising 900 stanzas, treats of the shrine of *Skanda* at *Tiruchchemúr*, Tirunelvéli. The author and the date both unknown.

24. *Chétu Puráṇam.*

A poem in 50 cantos, comprising 3,437 stanzas. Treats of the shrine of *Siva* at *Iráméchuram*, as also of the merits of bathing in certain spots of the sea in that neighbourhood, especially on the side of the rocks supposed to be the remains of the *chétu* or bridge erected by *Ráma* for passing over with his army to Ceylon. The author is called *Aḷakiya Téchikar*, but the date is unknown.

25. *Kóyit Puráṇam.*

A poem in 5 cantos, comprising 410 stanzas. Treats of the shrine of *Siva* at *Chitamparam*, where once upon a time he is said to have manifested his presence visibly among his worshippers, and danced the *Tándavam* before them. The author is called *Umápati Chivácháriyar*, but the date is unknown.

26. *Tirukhalukkunṛa Puráṇam.*

This poem describes the shrine of *Siva* at *Kalukkunṛam*, or "the Eagle Mountain," so called from the sons of the sage

Viruttachiva, who were born as eagles, having obtained their human forms by doing penance on its summit. The author is said to have been a blind poet, named *Kavi Vira Rūkava Mutaliyār*.

27. *Vēḍapuri Purāṇam*.

A poem treating of the shrines of *Siva* at *Vēḍapuri*, or *Tiruvedkalāru*, near *Chitambaram*, supposed to have been the joint production of the celebrated *Chaiṇa* devotees *Appar Chuntarar* and *Māṇikkavāchakar*.

28. *Kāñchi Purāṇam*.

A poem treating of the shrines of *Siva* and *Parvati* at *Kāñchipuram* : by the same author as that of No. 1.

29. *Paḷani Purāṇam*.

A poem treating of the shrine of *Skanda* at *Paḷani*, in the south of *Coimbatore*.

30. *Tiruppuvāṇa Purāṇam*.

A poem treating of the shrine of *Siva* at *Tiruppuvāṇam*, near *Chitambaram*.

31. *Tiruppāchūr Purāṇam*.

A poem treating of the shrine of *Siva* at *Tiruppāchūr*, in the *Carnatic*.

32. *Champakēśwara Purāṇam*.

A poem treating of the shrine of *Siva* at *Champakēśwara*, or *Tiruvāṇaikkā*, near *Trichinopoly*.

33. *Tiruvaiyāṭṭu Purāṇam*.

A poem treating of the shrines of *Siva* at *Tiruvaiyāru*, near *Tanjore*.

34. *Kālatti Purāṇam*.

A poem treating of the shrine of *Siva* at *Kālatti*, or *Kā-lāstiri*, a mountain and town in the *Carnatic*, where a black elephant, as the name implies, is said to have worshipped him. This work was undertaken by *Karuṇaippirakācha*

Chuvámi, but was finished by his brothers *Chivapparakácha Chuvámi* and *Vélaiya Chuvámi*, all of whom were *Chaiva* priests, and flourished in the seventeenth century.

35. *Nallúr Puráṇam*.

A poem treating of the shrine of *Siva* at *Nallúr*: by *Vélaiya Chuvámi*.

36. *Tirukúva Puráṇam*.

A poem treating of the shrine of *Siva* at *Tirukúvam*: by *Chivapparakácha Chuvámi*.

37. *Chirkáli Puráṇam*.

A poem treating of the shrine of *Siva* at *Chirkáli*, or "*Seegally*," near *Chitambaram*: by *Arunácala Kaviráyar*, who lived between 1705 and 1772 A.D.

38. *Kuḷattúr Puráṇam*.

A poem treating of the shrine of *Skanda* at *Kuḷattúr*, near *Madras*: by *Charavaṇapperumáḷ Aiyar*.

39. *Taṇikai Puráṇam*.

A poem treating of the shrine of *Skanda* at *Taṇikai*, near *Madras*: by *Kantappa Aiyar*.

40. *Kayilácha Puráṇam*.

A poem treating of the *Kayilácha*, or *Paradise of Siva*, as also of his shrine at *Trincomalee*.

41. *Tiruvárúr Puráṇam*.

A poem treating of the shrine of *Siva* at *Tiruvárúr*.

42. *Máka Puráṇam*.

A poem in 32 cantos, comprising 1,492 stanzas, treats of the origin and merits of the ablutions performed by the *Chaivas* in the month of *Máka* (February-March).

43. *Chivaráttiri Puráṇam*.

A poem in 9 cantos, comprising 652 stanzas, relates to the *Vigil* and *Fast* observed by the *Chaivas* during the night preceding the new moon in the month of *Máka*.

44. *Vikkinésvara Puránam.*

A poem treating of the legends of *Vikkinésvara*, the elephant-faced god.

45. *Káyilácha Málai.*

An account of the first settlement of the Tamils in Jaffna, together with the legends of the *Chóla* princess, who was relieved from the deformity of a horse's head with which she had the misfortune to be born, by bathing at the well at *Kíri Málai*.

47. *Kalveddu.*

An account of the king *Kulakkóddu Mahárája* founding and endowing a temple in honour of *Siva*, or *Kónésvara*, at Trincomalee. An abstract of this poem in English has been published by me in the Supplement to the *Ceylon Gazette* of November 26, 1831.

The following are written in prose :—

48. *Nalāṇ Katai.*

The adventures of the king *Nalā*, and *Tamayanti*, his consort. This work has been translated into English by Mr. Kindersley, and published in his "Specimens of Hindú Literature."

49. *Irámar Katai.*

The adventures of *Rama*.

50. *Virakumáran Katai.*

The adventures of *Virakumáran*. An abstract of this work is given in Mr. Robert's "Illustrations of the Sacred Scriptures," pp. 199-203.

51. *Chiruttonḍan Katai.*

An account of *Chiruttonḍan*, a *Chaiva* devotee, who lived at Tiruchchepkáḍu.

52. *Asvameṭṭayāha Katai.*

An account of the sacrifice of a horse by the *Paṇḍavas* after their victory over *Turiyōtanaṇ*.

53. *Kaṇṇaṇ Katai.*

An account of *Kaṇṇaṇ*, the tyrant of *Maturai*, as also of *Krishna*, by whom he was destroyed.

The following works on History and Biography belong to the Tamil Christians and the Moors :—

1. *Tēmpāvaṇi.*

A poem in 36 cantos, comprising 3,613 stanzas, written by the Rev. Father C. J. Beschi, in 1726. Its principal subject is the history of the Holy Family, but it incidentally treats of all the remarkable events recorded in the Old and New Testaments, as well as of the lives of the Saints in the early ages of the Church.

2. *Tiruchchelvar Kāvīyam.*

A poem in 24 cantos, comprising 1,948 stanzas, treats of the history of *Tiruchchelvar*, an Indian prince, who was converted to Christianity by the anchorite *Barlam*.

3. *Chikāmaṇi Mālai.*

A poem treating of the history of *Tēvachakāyaṇ*, otherwise called *Nilakaṇḍaṇ*, who was *Champridi*, or minister, of *Vaṇchamārttāṇḍaṇ*, king of Travancore, but having adopted the Catholic faith was degraded from his office, put to torture, and finally shot on a hill near *Arampaḷḷi* by order of his royal master.

4. *Atichaiya Kāṇḍam.*

A poem recounting the miracles wrought by God at the intercession of the Blessed Virgin.

5. *Joseph Purāṇam.*

A poem treating of the history of *Joseph* and his brethren, written by the poet *Kūḷan̄kai Tampirāṇ*, and inscribed to the Rev. Philip De Melho, of Jaffna.

6. *Chira.*

A poem treating of the birth and exploits of *Muhammad*: by *Umaru Pulavaṇ*, of Káyilipadḍaṇam.

7. *Kaṅkapisheka Málai.*

A poem treating of the history of *Muhammad* and that of his four immediate successors : by *Kaṇa Kavirāyaṇ*.

8. *Misrasi Malei.*

A poem treating of *Muhammad's* Night Journey to Heaven : by *Ali Pulavaṇ*.

9. *Shidad Purāṇam.*

A poem treating of the history of *Shidad*, the first king of the tribe of *Ad*, who attempted to create a paradise on earth, proposing thereby to render himself equal to God, whose honours he claimed.

10. *Mūsa Napi Purāṇam.*

A poem treating of the history of *Moses*.

11. *Yúsufu Napi Káviyam.*

A poem treating of the history of *Joseph*.

12. *Ibni Aṇḍan Patavedḍu.*

A poem treating of the victory of *Ali* over *Ibni Aṇḍan* and two other kings : by *Aliyār Kavirāyaṇ*.

13. *Subyil Patavedḍu.*

A poem treating of the victory of *Ali* over the king *Suby* : by *Varisei Meiyān*.

14. *Zakkun Patavedḍu.*

A poem treating of the victory of *Ali* over the king *Zakkun* : by *Varisei Meiyān*.

15. *Kásim Patavēḍḍu.*

A poem treating of the victory of *Kásim* over some infidel chieftains.

16. *Samaun Patavēḍḍu.*

A poem treating of a boy, named *Samaun*, killing an infidel chieftain in a single combat.

17. *Muhaiuddin Purāṇam.*

A poem treating of the history of *Muhaiuddin*, Kaliph of Bagdad, who is considered by the Moors as a great saint : by *Muhaiuddin Pulavar*.

18. *Muhaiuddin Málai.*

A poem treating of the same subject as the last, but with a studied brevity and in a different style : by *Maula Pulavar*, of Cháttan̄kudi.

19. *Abusahamma Charitai.*

A poem treating of the history of *Abusahamma*, who was put to death by the Kaliph Umaru, his own father, for adultery and drinking.

20. *Damimansa Charitai.*

A poem treating of the adventures of *Damiman* in the Great Desert : by *Ségu Lebbe Pulavar*.

21. *Ansarun Patavēḍḍu.*

A poem treating of the victory of *Ali* over the king *Ansarun*.

22. *Rabsukul Patavēḍḍu.*

A poem treating of the victory of *Ali* over the king *Rabsukul*.

The following works are written in prose :—

23. *Periya Purāṇam.*

The History of the Bible : by the Rev. Father Jacome Gonçalves.

24. *Chinṇa Purāṇam.*

A compendium of the preceding work : by the same author.

25. *Tévappirachaiyṇ Tirukkatai.*

The History of the People of God : by the Rev. Father Gabriel Pacheco.

26. *Chukirta Tarppaṇam.*

The Lives of the Saints : by the Rev. Jacome Gonçalves.

27. *The Historia Ecclesiastica.*

By the Rev. C. T. Walther, Tranquebar, 1731.

28. *The Life of the Venerable Joseph Vas.*

By the Rev. Father Gabriel Pacheco.

29. *The Life of St. Francis Xavier.*

By the same author as the last.

30. *A Summary History of Hindústán, from the Muhammadan Invasion.*

By P. Nāṇappirakácha, Mutaliyár, Vepery, 1830.

(To be continued.)

SKETCHES
IN THE NATURAL HISTORY OF CEYLON:
ORNITHOLOGY.

BY E. L. LAYARD, ESQ., C.M.E.S.

(Read February 24, 1849.)

ON THE GENUS *Bucco*.

THE design of the following sketches is to illustrate the Fauna of this Island. They are intended to form part of a series of Papers commencing with the *Indigenous Mammalia*, proceeding downwards in the scale of creation to the zoophytes which inhabit our seashores and lakes.

They are in a manner out of place here; but as this and the succeeding group have lately occupied much of my attention during leisure hours, I have been induced to embody my notes while the interest attached to them was yet fresh in my mind.

“There is one of these provinces”—says Mr. Kirby, speaking of the pursuits of the Zoological Club, in his address at the foundation of the Zoological Club (November 29, 1823)—“that I think ought to stand high in the esteem of every patriot zoologist,—I mean the study of the animals that are natives or periodical visitants of his own country. An *Indigenous Fauna* is the first desideratum in our science; and could a work of this kind be accomplished in every country, regard being had to natural boundaries, we might hope to become acquainted with all the principal groups of animals, and get a much more correct idea than with our present imperfect knowledge we can attain to, of

the genuine *Systema animalium*, with all its infinities and analogies as concatenated and contrasted by its Great Author."

Agreeing entirely with the view here taken by the learned writer, I have, since my residence in the Island, sought to gain an intimate acquaintance with its animal productions. And that the small amount of knowledge thus acquired should not be quite useless, but haply serve as a stepping-stone for others, I prefer giving it at once to the public, rather than await perfection, which, in a study of this nature, is never attained; each succeeding day disclosing a new and varied page in the inexhaustible Book of Nature.

The family selected for the subject of the present Paper derives its name from the conspicuous tufts of bristles projecting forward along the bill,—in some species surpassing it in length; the bill itself is very robust and conical, and generally as long, if not longer than the head. From the width of the gape the various species, all eminently baccivorous, are able to swallow a good-sized fruit.* The nostrils are round and exposed. Feet zygodactyle, resembling the *Picidæ*, like whom, it is said, they climb, and even "tap." On this latter point I am very sceptical, considering that the *Picidæ* do it to obtain their insect prey, while the *Bucconidæ* are fruit-eaters. As to their climbing even, I doubt if it extends beyond crawling up to their nests in the holes of old trees, which the natives tell me they do, always alighting a little below and climbing upwards. My informants alluded particularly to *B. rubricapillus* and *flavifrons*. Well authenticated information on these points would clear up much uncertainty.†

* I once shot *B. caniceps* with a fruit in its throat, the stone of which measured three-fourths of an inch in diameter.

† In confirmation of what I before observed as regards the daily acquirement of knowledge in natural history, I extract the following

Group : *Zygodactyli*.

Family : *Bucconidæ* (*Barbets*).

Genus : *Bucco* (Linn.).

B. caniceps (Franklin).—This is the largest Barbet we have. It measures about $9\frac{1}{2}$ in. in length—of wing $4\frac{1}{4}$ in., tail $1\frac{7}{10}$ in., tip of bill to forehead $1\frac{9}{10}$ in.; colour of bill is reddish; a patch of bare skin of a dull orange colour surrounds the eye, and extends some distance backward; colour above, green; head and neck brownish freckled with white, each feather being brown, with the shaft whitish; vent, bright green; legs, orange.*

Common in Ceylon, frequenting trees, on the fruit and berries of which they feed. The note is a shrill "*Poo poo poop*," often repeated. Native name, *Mal kottorumá*.

B. flavifrons (Cuv.).—This handsome species is next in size to *B. caniceps*, measuring about $7\frac{1}{2}$ in. in length—bill to forehead 1 in., of wing 4 in., tail $2\frac{1}{2}$ in.; above, dark green; the edges of the feathers paled; forehead, golden yellow, the colour extending over the head along the shafts of the feathers; there is also a spot of yellow at the base of the bill. The chin is blue; a similar coloured patch surrounds the eye, extending backwards; lower mandible of beak yellowish brown, upper mandible deep brown; vent, yellowish green; breast the same, but the feathers being each edged with a darker green give it a scaled appearance; inside of wing blue and buff; underside of tail and legs verditor. This species is confined to the hilly country, where it replaces *B. caniceps*, and is very common: they are

from my note book:—"Saturday, March 17. '*B. rubricapillus*': Shot this species climbing up the limb of a tree, and chipping off bark in quest of insects." My attention was drawn to the bird by the tapping it made, and I shot it thinking it was a new woodpecker.

* *B. Zeylanicus* so closely resembles this in all respects except size, that I am inclined to think it a mere variety. When the examination of numerous specimens shall have determined this it shall be noticed.

generally found in pairs, and the moment one begins its shrill call the other answers it. This call resembles somewhat that of *B. Indicus*, the next species, but is louder and more shrill, and may be heard to a great distance. This species has been hitherto considered very rare, and rests principally on the authority of Levillant. It is peculiar to the Island, as many other varieties of birds and animals are, which have remained unknown for years, but will soon, I trust, grace the cabinets of our Museum, and take their place among the described species of the Indian Fauna.

B. Indicus (Linn.).—Length, 6½ in., 1 wing about 3 in., tail 1½ in., bill to forehead $\frac{3}{4}$ in.; above, green with a ruddyish tinge, the feathers slightly margined with yellow; below, yellowish-white, each feather centred with green; forehead and gorget brilliant crimson, immediately behind which is a black band fading off into dark lead colour; below the gorget is a narrow band of golden yellow; chin and throat sulphur colour; a similar coloured spot surrounds the eye; base of bill black, as is also the bill itself; feet reddish, with black claws.

They are fond of sitting on a dead twig, or tree-top, uttering their dull, monotonous call, generally beginning with a loud “*tur-r-r-r-r*,” ascending the gamut and ending with “*ho-turr, ho-turr*.” Hence the native name of the whole genus, *Kottōrumō*. The species is very common in Jaffna and Colombo, but not so much so in the hills, where *B. rubricapillus* replaces it. They are very partial to the young fruit of the cotton and tamarind, which abound in the Jaffna district.

B. rubricapillus (Gmelin).—Much resembles the preceding in size and colour, but the forehead with a smaller and less brilliant red patch; the gorget is almost obsolete (in some specimens quite so), and the throat, chin, and eye-spot

deep dull orange; the upper parts are of a more unvaried green, and the lower lighter and streakless.

Found in Colombo and Jaffna, occasionally in company with the preceding, but its great haunt seems to be about Kandy, where it may be found in small parties of six or eight. When one flies from a tree the rest all follow, and though the Indian species are said to be solitary, this one is certainly not so. They also roost in these small parties, as in the evening I have seen them seeking their roosting-place together. Native name, *Kottóruná*.

Nothing is known of the birds, &c., of the Batticaloa district. Contributions from thence will prove most acceptable to the Society's Museum. *B. caniceps* and *Indicus* I have seen from thence, but some even of the Indian species may yet be found there. In a small collection presented to our president, I found two specimens of *Halcyon capensis*, which is stated to be common there, though unknown in this part of the Island. Also in a small lot of skins brought thence by a friend, I detected five species not found here—one of them a water-rail (*Rallus*). The district is rich in water-birds, and worthy the attention of any of our members who may be visiting it.

ON THE GENUS *Hirundo*.

In commenting on the Fissirostral tribe, Swainson has well and shortly described them in the following passage:—
“The Fissirostral birds, as a whole, are peculiarly distinguished by having the powers of flight developed in the highest degree: all the energies of their nature seem concentrated in this one perfection; for their feet are always very short, weak, and generally so imperfect as to be of no further use than to rest the body after flight. Their food is exclusively insects, captured upon the wing. To accomplish this, nature has given to their mouths enormous

width, by which, superadded to their amazing flight and rapidity of movement, they are almost sure to capture their prey." Here, then, are well summed up all the general qualities of the swallow race; a few individual peculiarities of course remain, which will be noticed under the respective species. The family is divided into two sub-families, *Hirundo* and *Cypselus*, the latter again sub-divided into the following:—*Cypselus*, *Acanthylis*, *Collocalia*, and *Macropteryx*.

Hirundo (Linn.).—Bill flattened throughout; upper mandible slightly hooked; rictus devoid of vibrissæ; feet insessorial; lateral toes equal; hind and middle toes equal, and as long as, if not longer than, the tarsus; plumage lustrous; tail more or less forked.

Only two of this genus have as yet been recognised in Ceylon; but one of them is an undescribed species, and, so far as I can ascertain, is not migratory, but confined to our Island.

H. gutturalis (Scopoli); *H. pnayana* (Lath.); *H. Javanica* (Sparr.); *H. Javanica* (Sykes).—Common in India and the Malay countries generally. They arrive in Colombo about the end of September. I saw them in Jaffna in abundance during the months of January and February. I have never yet seen the nests of these birds, nor can I conceive where they build so as to escape notice. I have observed them sitting much on the stony edge of the moat, both here and in Jaffna, fond of hunting over grassy fields and meadows. Plumage glossy, blue on the back; wings and tail inclining to brown; forehead and throat rufous; colour below the throat steel blue; underneath flesh-coloured; tail barred with white; outer tail feathers very long, having been known to exceed the next by $2\frac{1}{2}$ in.

H. hyperythra (Layard).—This handsome swallow is confined to the hilly region of Ceylon, and is an undescribed

species new to the Indian Fauna. My first acquaintance with the species was in November, 1847, when on a journey to Kandy. Their glossy blue wings and back contrasting with their red underside and tail coverts, struck my attention, nor could I remember having ever seen any other swallow with the same fine tints. During our breakfast at Ambépusa they were continually skimming over the open space in front of the bungalow and along the river in search of their insect prey. Not having a gun I was obliged to content myself with making a note of them in my Journal of Natural History. In February of last year Mr. Brodie, of Puttalam, showed me a very fresh specimen of a new swallow, which he said he had found in a chena towards Kurunégala. This I instantly recognised as the Ambépusa bird, and this is the first instance of its being procured. Subsequently I observed them at Ambagamuwa in March, and at Kandy in November. They frequent the hills free from high trees, and are fond of perching in flocks on the coffee and other low bushes, sallying off occasionally in quest of insects.*

Plumage of the back as far as the tail coverts glossy steel blue. Tail coverts, vent, and breast deep rufous; throat inclining to yellow; just over, and in front of the eye, is a still darker rufous line. The shafts of the breast and throat feathers are black, the colour extending in some

* The late Dr. Gardner told me that a pair of these birds built their nest on a ring in the ceiling of his house in the Botanical Gardens at Pérádeniya. The ring supported a chain and hanging lamps in the centre of the sitting-room. This shows their fearless nature, resembling in this respect the common martin of England, and also in the structure of their nest, which Dr. Gardner described as "made of clay and like that of the English swallow." Eggs unknown at present: but I trust this notice may attract the attention of some one residing in the interior, and lead to specimens being sent to us for our local Museum. The young birds frequented the nest for a month after being full fledged, returning to it every night to roost.

instances to the feather; under tail coverts rufous, with steel blue tips; the tail and wing primaries glossy rifle green. In size these birds exceed *H. gutturalis*, both in length and plumpness. The wings are pointed, and the tail forked, though not to the extent of the preceding. The exterior feathers I have never observed of equal length. Bill distinctly hooked and notched; feet and legs more robust than among the generality of swallows; lateral toes equal; hind toe longer than middle, and as long as tarsus.

Macropteryx (Swainson).—An intermediate genus of Swainson's, between *Hirundo* and *Cypselus*. Tarsus very short and bare; anterior toes of nearly equal length; halux shortest; hind toe very weak and short; plumage silky; head crested; tail very long and much forked; outer tail feathers projecting upwards of 2 in. beyond the next. Wings in some very long.

We have but one of the present genus in the Island, *M. coronatus* (or *longipennis*), which appears to be generally distributed, though not very common. I have traced it along the western coast to Jaffna, in the interior to Kandy, and along the Ambagamuwa range. In Colombo it is met with in small parties, frequenting the cinnamon gardens in the neighbourhood of high jungle. They have a long sailing flight, during which they utter a peculiar note distinct from any of the swallow tribes, and not unlike the words "*chiffle-chaffle, chiffle-chaffle*," ending with "*klecho-klecho*," often repeated,—the cry they likewise utter when perched on the leafless branches of trees on the look-out for insects. The crest on the head is on such occasions rapidly elevated and depressed. Our Ceylon specimens agree well with the description given by Dr. Blyth of the Indian birds. "Outer tail, &c." I have never been able to ascertain the breeding-place of these birds, although they seem to remain

most of the year with us, appearing in March and continuing till December. It is said that they build in hollow trees.*

Acanthylis (Boie.) ; *Chaetura* (St.).—From *Macropteryx* we pass to the present genus, containing the largest of our *Hirundinidæ*. Of this also only one species has been discovered in the Island, namely, *A. caudacuta*, *Hdo. caudacuta* (Latham) ; *Cyp. giganteus* (Temp.). This gigantic swift seems confined to Nuwara Eliya, where, according to Lieut. Sillery, C.R.R. (to whom I am indebted for the only specimen I possess), it flies with amazing velocity. The natives say they build in hollow rhododendron trees which abound on the plain.

This bird may be easily known by collectors from its large size (being about 9 in. in length) and its spiny tail. Swainson's characters of the genus are as follow :—“Feet as in *Macropteryx*, but the tarsus longer than the middle toe ; tail short, and even the shafts prolonged into acute points ; the outer tail coverts are white ; the chin also is whitish.”

From this genus we pass to *Cypselus* (Illiger), having the tarsus thickly clothed, toes short, and all directed forwards.†

This is the common Indian Uban swift, but with us it is rare, it having only twice fallen under my notice, and both times in Colombò in the neighbourhood of Slave Island. I do not know that it breeds with us, though it builds in great numbers at Madura.

* Capt. Tickell.

† These characters do not apply to the sub-genus *Collocalia*, in which the feet and legs are naked, and the halux well opposed. (Swainson seems to have omitted this family altogether.) Tail in most instances forked, or indented. The whole tribe are of very uniform colours,—sooty black or brown with glossy tints, sometimes relieved with white on the throat, belly, or tail coverts. Our ascertained species consist of *C. affinis* (Gray), easily known by its white rump and throat and blacker plumage than any of our other swifts ; length about 5½ in. ; expanse of wing 12 in.

C. balasiensis, (Gray).—The smallest and commonest of our *Cypselidæ*, frequenting palmyra trees in all parts of the country. Its colour is one unvaried ashy brown, with a tinge of green in its gloss. Total length $4\frac{3}{4}$ in. Tail very forked. On the wing it may be easily distinguished from the preceding by its slimmer shape and deeper forked tail, which it is continually unclosing and folding. It may be found on the wing all through the day, but in the evening it is most brisk, hawking after its food and chasing its fellows with shrill screams round some solitary palmyra tree, in the dead and hanging fronds of which several pairs build their nests, which are composed of the dry cotton of the *Bombax pentandron* and other light flossy substances, collected by them on the wing, and cemented together in a semi-circular shaped cup, attached by the flat side to the leaf. The eggs are of a pure white. I have never found more than three in a nest. They breed in the months of May and June, perhaps oftener, as contrary to my former supposition I found they are only partially migratory.

Genus Collocalia (Gray).—This genus has been established for the reception of the fabricators of the celebrated edible nests of the Chinese gourmands. In structure the birds prove to be true *Cypseli*, but of a feeble race; they also differ in the feet and naked tarsi, the hind toe being well opposed, though capable of rotating forward. Three species only are well known: it is probable there are many more, but from the conflicting accounts of travellers much uncertainty still exists concerning them.* Of those three, one only has

* Extract of a private letter to the author from Dr. E. Blyth, Curator Hon. E. I. Co.'s Museum, Calcutta, dated August 7, 1849:—"I shall, therefore, be glad of any additional information you might be able to supply me with relation to distribution of species, their nidification, &c., and at present I should be glad to know if any edible birds' nests are gathered on the Ceylon coast; and, if so, whatever you can learn about them, with specimens of the birds, probably of more than one species, which construct them, and the nest of each species Since

hitherto been observed in Ceylon, and as the nidification of the whole group requires investigation, I am induced to give at length the observations which I have made upon this species. My first acquaintance with it was on October 17, 1848, when I killed a specimen from a flock flying over low paddy fields at Kótté. The bird was full fledged and in good condition; small flies, &c., were found in its mouth and throat. Not having any means of identification I knew not how to class it, as it did not strictly accord with any of Swainson's characteristic marks of *Cypselus* or *Hirundo*. During circuit at Kandy in November I obtained several adult specimens. They appeared very numerous, flying at a vast height over the hills surrounding the town.*

I had previously heard that near Kalutara, somewhere in the Pasdun Kóralé, the Chinese collected the nests of the Edible Swallow; but it never struck me that this was the fabricator of the far-famed nests. In December, the late Dr. Gardner, then Superintendent of the Government Botanical Garden, proposed that I should accompany him into the Pasdun Kóralé (whither he was going in search of a rare fern) to inspect the cave where these swallows were said to build. We accordingly left Kalutara on December 18, and walked to Hevessa, a distance of 35 or 40 miles. We reached our destination in the evening of the 20th, when we immediately ascended to the cave,

writing the foregoing I have been studying the collocalia, or E. I. B., and have come to some notable conclusions respecting them. First, the *Hiro. esculenta* (L.), founded on one of Poivers' drawings, has, I am satisfied, no prototype in nature, or, if anything, it must be a true *Hirundo*, with white tail markings, erroneously supposed to be the fabricators of the celebrated nests. Secondly, the *H. nidifica* of Latham or *H. esculenta* (Apud Shaw, Hors, &c.), is not the builder of them, but the so-called *H. Fuciphaga* of Thunheyt, the various descriptions of whose nidification, and that of *Nidifica*, requires to be transposed..."

* With them appeared a huge swift, which I am inclined to think must be *Cypselus melba*, from the whitish throat and belly. From the attitude kept by these fine swifts I could not even get a shot at a single specimen.

which is situated near the summit of a hill, called by the natives Diyagalagulāwa, or Hunumulnakōta, about 500 feet above the level of the plain below. The cave consists of a huge mass of limestone, which has separated from the face of the rock, and slipped down upon some loose boulders below, forming a hollow triangle about fifty or sixty feet long, by twenty-five broad and twenty high. There are three entrances—one at each end and one (a very small one) in the centre. The rocks which compose the floor are covered to the depth of one or two inches with the droppings of the inmates, old and young, mingled with strands of grass, &c., dropped from the nest or by the parent birds. The light which struggled into the cave was dim and uncertain, but enough to enable me to discern many hundred nests glued to the rock, glistening like flakes of ice. One side of the cave (the hill side) was entirely unoccupied, I presume on account of the water, which evidently streamed down it in wet weather, and perhaps in the dewy morning, collected from off the trees with which the mountain is densely clad. Within reach of my hand was a small ledge of rock, from which I took five or six nests, and in two of them captured two single young nestlings, fledged enough to escape, which one effected. The nests procured were evidently of the most inferior description, and had been left on that account by the Chinese for the young brood. They were composed of dried grasses, mosses, hair of cattle, &c., agglutinated together, and cemented to the rock by what is presumed to be the saliva of the parent birds.*

These substances appear to be laid on most irregularly, in unequal masses. In one nest in my possession the foundation is in thick patches, clear and semi-diaphanous ;

* Specimens of nests and birds in spirits, for the purpose of being dissected and examined by scientific men, have been forwarded to Calcutta. The result of this examination will be communicated in a future paper.

the interior is lined with thin threads of it, crossing and recrossing each other in every direction. The ends of the materials added to it are all drawn together to the upper corners of the nest, and diverge in the middle, thus forming a semi-circular shallow cup about $1\frac{3}{4}$ in. deep, $2\frac{3}{4}$ in. long, by 2 in. broad. The formation seems grandular, and effected in layers, which can be split apart with little force. I cannot detect any appearance of *blood*, as remarked by the Rev. J. Barbe, in the Journal of the Asiatic Society, chapter xv., page 363. A new nest in the possession of our President, Sir J. E. Tennent, is composed entirely of the clean white gummy matter, without any admixture of grasses or any foreign body.

The Rev. J. Barbe, speaking of the nests of *C. fucifaga*, collected at Mergui, the Nicobars, &c., says: "They are of three qualities. The first, of a fine whitish colour, is obtained before the swift has laid her eggs. This quality is sold at Penang from 40 to 50 dollars the cattee.* The second quality, of a brownish colour, is obtained by taking the nest when the bird has laid her eggs. This quality is sold at Penang from 20 to 30 dollars the cattee. The third quality is of a dark colour, mixed with *blood* and feathers, being obtained by taking the nests when the young birds have flown." Also: "The Chinese say that when the nest is taken before it is completed the bird makes another, but of an inferior quality; and it appears that it exhausts itself in building the second, the nest being *spotted with blood*." This would appear to be much the case with *C. nidifica*, and accords well with the accounts given to me by an old Chinaman. He told me that they had four harvests in the year, one of which was early in October. This would bring the time down to about the age of the nestlings I

* According to the "Batavian Transactions," for nearly its weight in silver!

took, allowing about two months for the building of the nest, as stated by Heer Hooyman in "Batavian Transactions." Dr. Blyth states in his pamphlet that a friend of his, a Captain Lewis, saw much of these birds in the Nicobars, and especially, he has often remarked, that they retire early in the afternoon to their caverns (*i.e.*, about 4 P.M.). But he states that the edible nests, as we see them, are only the lining, which comes out entire, though independently affixed to the rock, being underlaid by a network of some vegetable fibrous substance placed on the ledges, which the gatherers are careful never to remove. In both particulars the Ceylon birds differ from this. Though it was a dull afternoon, nay, even rained a little, the birds were on the wing *till dark*;* and in the dirty soiled nests composed of the vegetable and fibrous substances, and which certainly had never had a lining, but evidently formed in one solid fabric, I captured the young birds; neither were the ledges, where such things were, sufficient to sustain a deposit of material, and in most places the nests were glued to the smooth surface of the rock, which, as before stated, *overhung*. I was told that in the neighbourhood of Hevessa there were one or two other caves in which the swifts were known to breed, but had not time to visit them. I should think, however, judging from the numerous flocks of birds I saw soaring round the detached summits of the hills in that district, and also from the fact of finding them in Kandy during November and December, that very many caves exist, which remain to be discovered, and to add to our Colonial revenue. The apathy of the natives will in a great measure defeat this: they leave it entirely in the hands of

* December, 1848:—Walking late in the evening by moonlight in the Cinnamon Gardens, my attention was attracted by the twittering of *C. nidifica*, and looking up I descried thousands hawking for flies; they seemed, however, to keep progressing in a N.E. direction.

the Chinese, never attempting to speculate in it themselves, and when, as is the custom, the "rent" is put up to auction by the Government, the Chinese are the only bidders. Other species of nest-builders may perhaps be found in the Island. *C. fucifaga*, for instance, being probably an exclusively sea-coast species, may breed among the rocks and clefts of the Trincomalee coast. They are known to breed along the Bay of Bengal; their nests are of a superior quality to those of *C. nidifica*, and might be worthy the attention of any person residing on the eastern side of our Island.

For the purpose of enabling our readers to identify the species, I give the description of *C. nidifica* from a specimen before me, that of *C. fucifaga* from Dr. Blyth's pamphlet:—

C. nidifica. *—Length from $4\frac{1}{2}$ in. to $4\frac{3}{4}$ in.; of middle tail feather 2 in., outer $\frac{3}{8}$ in. longer, thus forming, when spread, an indented tail; length of wing about $4\frac{1}{2}$ in. The general colour is a glossy fuscous brown, rather light on the body, and below very pale; bill very short; nostrils broad and prominent; eyes large and sunken.

C. fucifaga; *H. fucifaga* (Thim.).—About $3\frac{1}{2}$ in. in length by 9 in. in expanse; the tail $1\frac{1}{2}$ in., and even; wing $3\frac{3}{4}$ in.; colour above blackish green, and purple glossed; below, fuscous brown, passing to white on the middle of the belly, with whitish edges to the lower tail-coverts. A single large feather with a distinct supplementary plumelet grows on the hind toe, being nearly as long as the toe with its claw: this is always normally present, but is often lost in dry specimens.

Before quitting this subject I must glance at a paragraph which has been brought to my notice in a work entitled "Illustrations of Instinct," by J. Couch, Esq., F.L.S.,

* *C. nidifica*; *H. nidifica* (Lath.); *H. esculenta*, assud. Horsfield; *H. fucifaga*, assud. Shaw; *H. brevirostris* (McClelland); *H. unicolor* (Jordan), and *Cypselus concolor*, of the same author.

&c., page 127. It is as follows, and I quote it at length that the subject may be freely canvassed :—"It is believed that all the species comprised in the Linnean genus *Hirundo*, scattered as they are in almost every corner of the earth, are impressed with a migratory character, and that their nests are generally formed in some cooler temperature than that which receives them at the opposite season of the year. And though it is known that in the Island of Madeira, in Ceylon, Surinam, Egypt, and probably in some other parts of Africa, swallows are found throughout the year, yet it seems that in all these the numbers vary with the season, which implies a migration of part of them ; and it does not appear that any of those which remain produce a brood." Now, assuredly this means that the *Hirundines* build their nests in a cooler climate than that in which they generally reside ; and that, though in Ceylon and elsewhere swallows are found throughout the year, yet that the bulk migrate to cooler latitudes, and the moiety which remain do not produce nests. This I have shown to be incorrect in this paper, which was written before I saw the passage referred to. As to *H. hyperythra*, B., it is confined to the Island as far as we know, never having been received from any other part of the world ; and from what I have seen, I suspect it is limited to the Kandy or hill country.*

I notice this to show how little is known of the Fauna of Ceylon. Surely there are some of our Members who could find time to notice a few of the common traits of nature, which are occurring under their eyes almost every day of their lives ; and I do hope this Society will be the means of diffusing, through its Journal, a spirit of inquiry and research among the native population, of whom many may be found having abundant time and opportunity.

* Mr. Brodie's specimen was procured near Kurunégala.

ON CEYLONITE FOUND NEAR TRINCOMALEE.

BY LIEUTENANT HENDERSON, C.R.R.

(Read February 24, 1849.)

CEYLONITE, so called from having been first discovered in Ceylon, is, in its primitive and usual form, a regular octohedron. It, however, also occurs as a cuneiform octohedron, and has been found, though more rarely, in rolled grains.

In size it reaches from eight to ten carats. The planes of its crystals are smooth, shining, and possessing a vitreous lustre. Its structure is lamellar, and its fracture what may be termed flat conchoidal. Occasionally it has been found to be imperfectly foliated.

Its specific gravity ranges from 3.6 to 3.7. The lighter coloured varieties (which I have not seen) are said to be transparent. The darker specimens can scarcely be called semi-transparent. On the edges of the crystals they are translucent. It is singly refractive; in hardness superior to quartz, but inferior to Oriental ruby or spinelle.

Subjected to the blow-pipe it is found to be infusible, without addition.

Its component parts are :—

Alumine	...	...	68
Magnesia	...	...	12
Silex	...	...	2
Oxide of Iron	...	...	16

98 (loss 2).

Ceylonite, otherwise called Pleonaste, has, since its discovery in Ceylon, been met with also in Norway. It is of the same family as the ruby, but more closely allied to that variety termed spinelle. This latter, indeed, which with

different lines assumes the various names of Balais ruby, Vermeil, and Rubicelle, by mixture with blue, passes through divers colours, till it finally arrives at indigo blue, which is frequently so deep as to be barely distinguishable from black.

This then is the Ceylonite, which more resembles a piece of jet than any other mineral. As a gem it can hardly be said to hold any rock. It seldom or never comes under the hands of the jeweller, but I can conceive that it might be very well adapted to be formed into mourning ornaments.

Ceylonite belongs to formations of the primitive class, as will be seen from the position in which I found it. It is said to have been found imbedded in calcareous spar, and in adulasia, accompanied by magnetic pyrites and crystals of mica; but of the correctness of this I am not aware. The crystals I met with were found in the low bank, both in the small water-courses formed by the rain and (by digging) apparently *in situ* within eight or ten inches of the surface. Its matrix appears to be a compact gravel.

The whole of the neighbouring rock belongs to the primary formation. On one side, at the distance of a couple of hundred yards or so, a cut in the road exposes a mass of gneiss (the predominant rock of the country), affording an excellent view of its conformable strata, dipping considerably towards the east. On the opposite, or western side, at no great distance, is discovered a vein of graphic granite, the characters of which are very beautifully and distinctly marked. On each side, and in contact with it, are veins of quartz and felspar, more or less commingled, as also a vein of mica. These, as shown by the section which has exposed them, stand nearly in a perpendicular position. One is struck by the arrangement which seems to mark the gradual weakening, on each side of the graphic granite, of that agency or power of peculiar crystallisation, which

disseminated the quartz through the felspar. In front of the granite lie large blocks of unmixed quartz, as if forcibly ejected from the mass while in the act of passing from a state of fusion into its present consolidation.

At the distance of half a mile to the westward of this point, a vein of trap is seen cropping out from the beach, midway between high and low water mark ; and this is the only other rock discoverable within miles of the spot.

APPENDIX.

HINTS TO AMATEUR CONCHOLOGISTS,

BEING SUGGESTIONS FOR THE COLLECTION AND PREPARATION
OF SPECIMENS.*By Hugh Cuming, Esq., F.R.S.*

LAND SHELLS.

LAND SHELLS are found in many places, such as under stones, in clefts of rocks, on the sides of hills and mountains, under decayed wood and trees, or the trunks or leaves of trees, at the root of trees and bushes, in decayed vegetable matter, dried leaves and moss, on small plants—in fact, almost every situation gives them, except open and exposed places. Look for them diligently when you are out collecting; where you find dead specimens you will soon find living ones. When collected, bring them home and put them in a pail, bucket, or some large vessel, and pour a quantity of cold water upon them, and cover up the vessel for two or three hours, which will cause the animals to come out a little. It is necessary to cover them up, or else they will crawl away. When they are a little out, run off the cold water, and pour a quantity of *boiling hot water* on them, so as to cover them well; let them remain a few minutes to cool a little, then take out the animal with a large pin or needle, as you would a periwinkle; when they are all done, take one of your soft brushes and wash off gently all the dirt and filth in clean water, then place them in another vessel of fresh water until all are done, then shake out well the water that is in them, and place them out to dry with their mouths downwards, but not in the sun; in a short time they will be dry. If they are small you can pack them away in small boxes, writing the locality and the situation in which you found them on the cover, for localities must be paid much attention to; but should the shells be rather large, then wrap up each shell in a paper by

itself,—in fine Chinese paper,—then pack them away in a large box, with their locality and with care, but never put by a box that is not quite full, without putting some cotton or other soft substance to fill up the box, for such tender subjects should not have a play during the transit home from where you collected them.

In the rivers, canals, lakes, ponds, and small streams, you will find many species of shells, which, although not handsome are very interesting, and many of them will prove valuable here in England ; therefore, do not leave a single one of them behind, as it may be a cause of regret hereafter. Some of the shells which you will find in the above-mentioned places are of the same form as the land shells, others are like our fresh-water mussel, or cockle : they are mostly found in the mud, sometimes in deep water. You will be sure to find dead ones on the banks of the lakes and rivers, and if you cannot procure them yourself, show the natives the dead specimens, and offer them money to bring you a quantity of them ; and the same with every other subject of natural history—don't think of a few dollars when you will make pounds of them ; but be not too lavish of your money with them—it will alarm their cupidity, and they will seek for more. I am certain that when the natives see that you are collecting these things, they will soon bring them to you, as they love money and do not value the articles you are seeking.

The rivers and pieces of water abound with shells : be diligent in seeking them, and your labours will be most amply repaid.

When you have collected the fresh-water shells, place them in a vessel and pour a large quantity of boiling water on them ; they do not require to be put into cold water before the hot water, as the land shells. As soon as the water is a little cool, pour it off, and take out the animal as before mentioned. Wash them, &c., but as the bivalve or fresh-water mussel will open wide as soon as the animal is out, you must tie them close with care before you put them out to dry : if you do not the hinge will break, and make the shell in part valueless. Some of the fresh-water shells, that are like the snails, have a mouth-piece, which you must take great care of, and keep these mouth-pieces by themselves,—that is, each

species of shell and their mouth-pieces must be packed together, for this mouth-piece, or operculum, is of great service in determining the species. Some of the land-shells have also a mouth-piece: those also must be placed with the shells to which they belong. Be most careful in attending to this piece of information.

When your bivalve shells are tied up and dry, wrap them up each in a piece of soft Chinese paper, and pack one of the small boxes so as they shall not break, for they are generally brittle, and must have care taken of them, and if your box is not full you can put in some other light small pill boxes of shells on them. Do not forget their localities, habitats, &c.

MARINE SHELLS.

These are found in various situations except the deep sea, where they can only be procured by dredging, which can only be done at great expense of time and cash; therefore, I shall confine my observations to the littoral shells.

The best time to collect marine shells on the sea shore is at the new and full moon, for then the tides make greatest ebb; therefore you should be on the spot two hours before low water, with an assistant to help you in turning over the large stones, should there be any, under which you will find many species of cowries, buccinums, tritons, mitras, cones, and several species of bivalve shells: also many kinds adhering to the stones, which must be taken off with a knife in a very careful manner. Several species bore into the stone itself, which you must break with hammers to get out the shell; or if the stone be soft, cut it carefully with a hatchet, in doing which you will see many species. Take care when you separate the stone to avoid breaking the shell, and those that may be near it. Be always provided with a light basket with a small box in it, to put the shells into which you collect, for the fine delicate ones must not be placed with the heavy and strong.

The stones which you turn over must be well inspected, as you will find many shells covered with marine matter, which makes them appear like the stone itself. Collect everything you see,

however small and unmeaning in appearance, for amongst them may be new genera and very rare shells, not seen before from such an interesting country as Ceylon.

Amongst other shells which you will find under stones are chitons, which must be taken off in the same manner as the limpet and other adhering univalves. When you have got the chitons home, separate them from the other shells, and put them into a pail of fresh water, and let them remain there from 12 to 24 hours; by that time they will all be straight and fair, and also the salt of the fleshy substance that surrounds them will be well soaked out; then cut out the animals, and wash them well inside and out from all filth, and throw them into another vessel of fresh-water; there let them remain until you have cleaned the whole, then place them on narrow slips of boards and bind them down tightly, and put them in a shady place to dry, but never in the sun; in three or four days they will be fit to pack, but never do so until you are satisfied they are quite dry. Do not let them be exposed to the rats and mice at night, as they will eat off their edges and destroy them. Should any of the chitons have hairs or spines, it would be well to wrap each specimen in a separate piece of paper to prevent the hairs or spines from being injured. Pray observe when you begin to clean them if the animals contract themselves in a different form: they are still alive, and you should defer cleaning them a few hours longer. These shells are valuable and highly esteemed.

Many stones at the very lowest ebb will have most shells on them, therefore you must not care about getting wet to turn them over, and never leave the place until the tide compels you. In some spots you may find shells of great value in one tide and under the stones. Amongst the rocks, on the sea shore, in the crevices and on them, you will find many species of catellas, chitons, murices, and several others. Make a careful survey of every rock and stone: they will amply repay your trouble. All sheltered coves or little bays are the best places in which to find shells. Take those places in preference. But when they are examined, then look to those in more exposed situations. The

first thing you ought to observe when you get into a new locality is to go along the sands at high water mark: you will then find many good shells thrown up by the sea, particularly light bivalve shells; you can take any time of the tide to do it. Never miss going after a gale of wind, you may then get many rare and valuable deep water shells which can never be procured otherwise. In sheltered bays and places, just at the very lowest water mark, you will find in the mud and sand many species of bivalve shells just beneath the surface, and generally in great abundance. Do not neglect to collect all and every species, and that in abundance.

HOW TO USE A DREDGE.

Dredging is performed in two ways. First, in a large sailing boat, under easy sail. Make fast your dredge to a rope of 100 fathoms long and three inches thick, and let the other end be made fast to the mainmast or any other secure place for fear of accident. Having arrived at the spot where you intend to dredge, bring the boat or vessel up on the wind, then throw your dredge overboard, and in the space of a minute or two the dredge will be at the bottom; then pay away the rope and make easy sail; let it always be thrown out astern of the boat or vessel. After being under weigh a quarter of an hour, haul in the dredge, and examine the contents. You must carry with you when you go dredging a fine sieve, a hand bucket, and a large cocoanut shell. Having got the dredge on board, take out the contents: if mud and sand with the cocoanut shell, and fill the sieve a third full with it, then let one of your people take it in his hand and hold it over the side of the vessel, then let another man pour water from the bucket upon the sieve gently, the man holding the seive gently shaking it, by which means you will get rid of all the fine sand and mud, leaving nothing but the shells and the larger *debris* of the sea. Examine well broken shells and stones that you find in the dredge, for on them you will find many genera of shells, such as chitons, calyptra, crepidula areas, and various others; and so continue,—all the contents of the dredge is emptied in the same manner. Go always well provided with things to put the shells in that

you collect, always separating the light fragile shells from the coarser ones, as the natives have no interest in the matter, and would be sure to break them. When they are cleaning the sand and mud in the sieve, always watch it to see what shells might appear when the first bucket of water is thrown over them, for should there be any heavy with some that are fragile, by the shaking of the sieve the more fragile ones will be broken, and those that are most valuable seldom come on the beach in a sound state.

The other mode of dredging I prefer, which is thus. Get a comfortable large boat with an awning, with a good anchor and 60 or 80 fathoms of cable, with a fisherman's canoe, and both proceed to where you intend to dredge; then come to an anchor, put the dredge in the canoe, having fastened the other end of the dredge rope in a secure manner, then order two men in the canoe to pull away, and when they have proceeded as far as the dredge rope will allow them, order them to heave it overboard, and when it has been down five or six minutes, haul it on board as I have stated before, and examine the contents. If the boat has bottom boards or convenient platforms you can empty the contents of the dredge on it carefully; the men can take off the dredge again whilst you are inspecting the contents of the last dredging.

Should the sand and gravel contain many small shells after it has been washed, and it would occupy too much time on board the boat to pick them out, put it aside carefully in some vessel, take it home and dry it, and pick them out at your leisure, for the small shells you get by dredging are extremely rare, and therefore more highly esteemed.

The most fruitful places for shells are in sandbanks in deep water, near to reefs and rocks. I always found them abound with shells, but oftentimes I had the misfortune to get the dredge foul of a piece of rock or coral, which you will soon find out by not being able to pull the dredge on board. When you find this, cause the men in the canoe to get hold of the dredge rope and slack it from inboard, and then to overhaul it until they come to where the dredge is fastened, and by a little exertion, being right

over where the dredge is fixed, they can unfasten it, which I have done scores of times. When the men in the canoe have got it clear of the rock, let the men on board the boat where you are haul in the slack of the dredge rope, by which they will pull the dredge and canoe clear of the rock, the people in the latter still holding on to the dredge. A little experience will bring you into the mode of dredging.

* The bivalve shells you collect in every situation put into a vessel and throw a quantity of boiling water upon them; they will then open, and by such means you can take out the animal easily. Then wash them and tie them up close with some small thread, put them to dry in the shade, after which you can pack them away.

Marine univalve shells you can place in a vessel in some secure place, where the stench will not offend, and let them remain there for a month or so; the animals will be completely decomposed; then you can put them into fresh water for a day, and by rinsing them in the water you will make all perfectly clean. Never allow any shells to be exposed to the sun, or thrown from one vessel to another, or in any way be roughly treated. If you do, their fine edges and spines will be broken, which will render them of considerably less value.

Due attention should be paid to the rivers and streams in the mountains, and all dense woods, and also to heaps of decayed vegetable matter in shady places, for there abundance of shells are frequently to be found.

PROCEEDINGS.

ANNIVERSARY MEETING.—MARCH 31, 1849.

Present :

The Rev. D. J. Gogerly in the Chair.

G. Muttukistna, Esq.	E. Muttukistna, Esq.
J. Dickson, Esq.	Dr. Willisford.
Major Lushington.	Dr. Misso.
R. E. Lewis, Esq.	The Hon. Treasurer.
C. J. E. Middleton, Esq.	The Hon. Secretary.

1. Read and confirmed Minutes of last Meeting.
2. The following gentlemen were then balloted for and elected Members of the Society :—

Dr. Rudolph Gyax, proposed by R. E. Lewis, Esq., seconded by J. Capper, Esq. ; B. Dodsworth, Esq., proposed by J. Capper, Esq., seconded by J. E. Middleton, Esq. ; James Alwis, Esq., proposed by Dr. Misso, seconded by E. L. Layard, Esq.

3. The Papers read at the previous Meeting were laid on the table in the usual course.

Resolved,—That they be printed in the Society's Journal.

THE MUSEUM.

Geology.

4. Dr. Gyax submitted, through the Librarian, the plan of a case for the reception of the Society's Minerals, &c.

Resolved,—That a sum not exceeding £9 be appropriated for the purchase of a case of the description given by Dr. Gyax.

5. The following donations to the Museum were then laid on the table :—

Natural History.

Specimens of Sea Shells, *Cypræidæ-Solarium-Perspectivum*, &c., from J. Mendies Muhandiram. Not in good preservation.

Specimens of the Silk and Cocoons of the *Bombyx mori*.

Phalæna paphia (Cram.). *Ph. mylitta* (Drury). *Bombyx mylitta* (Fab.).

Phalæna cinthia (Cram.).

Clay Nest of an *Odynerus* ———? supported upon the tendrils of a Passion Flower, by Edgar L. Layard, Esq.

The Larvæ Cases of two specimens of *Cicada plebeia*, from a friend in Kandy.

Four varieties of Land and Fleuviatile Shells, by E. Layard, Esq.

Skin of the *Mavis pentadactyla*, from the Rev. Greenwood. Damaged, head wanting.

Various specimens of Snakes in spirits, by Dr. Gygax and J. E. Middleton, Esq.

Four specimens of the Pearl Oyster, by James Steuart, Esq., Master Attendant.

Mr. Edgar L. Layard deposited the whole of his collection of Birds in the Society's premises, until specimens be received to replace them.

Industrial.

Seven Models of Native Boats used in the Trade and Fisheries of the Island, by the Treasurer.

Library.

Persian and Arabic Grammar, by J. E. Middleton, Esq.

Journal of the Asiatic Society of Bengal, No. 24.

6. The Secretary then read the following Report of the Committee of Management for 1848 :—

REPORT.

"In laying before you this Report of the Society's operations for the year 1848, your Committee have much pleasure in recording the great progress made by the Society, and in adverting to the stability and prosperity of this body which now witnesses the Fourth Anniversary of its existence.

Members.

"During the past session the Society has been deprived of nine Members by death and departure from the Island, yet the insertion of twenty-seven new names on the books is an earnest of

the extending utility of the body, and a sure sign that the public are not indifferent to its efforts.

Papers.

“It would not have been too much to have anticipated serious obstacles to the Society’s advancement, from the recent untoward events which have thrown a gloom over the prospect of all Colonial undertakings ; nor has the Society altogether escaped the ill-effects of the depression of the times, as the much smaller number of original communications read this year will prove ; yet even here your Committee can state with pleasure that these communications have mostly been received from new sources, and it is confidently hoped that renewed prosperity will restore sufficient leisure to the Society’s old contributors to enable them to enjoy the pursuit of literature and again appear in the pages of the Journal.

Museum.

“Another source of congratulation is the formation of a Museum for the reception of objects illustrative of the Natural History, the Antiquities, and the Industrial Progress of the Colony. The Government has liberally given the Minerals and Geological Specimens collected by Dr. Rudolph Gygax in the Sabaragamuwa district (about 1,200 specimens), which form the most complete collection which has been made in Ceylon. Other contributions from private individuals have been made in the several departments of Conchology, Entomology, Ornithology, Antiquities, &c., and many promises of support have been given. The accession to your list of Members of many gentlemen resident at outstations will offer peculiar facilities for promoting the objects of the Museum, and to those Members your Committee would beg to suggest that no opportunity be lost of forwarding subjects adapted to such a collection, however trivial they may appear to be. Printed instructions for the preservation of objects of Natural History have been already freely distributed, in several instances with success, and it is hoped that they will enable many others to forward specimens who otherwise, though willing, might have been unable to do so.

"To ensure the proper preservation of the Birds, Animals, &c., transmitted, a taxidermist has been engaged, and is expected from Calcutta, where he was attached to the Museum of the H. E. I. Company, and a suitable case for the objects provided: these expenses are to be borne by a subscription called the "Museum Fund," which has been opened for the express purpose, and is supported by donations or small monthly subscriptions.

"The number of donors to this fund is at present 11, of subscribers 29; the amount of donations and yearly subscriptions is, received and promised, about £40. Many of the subscribers are in no way connected with the Society. Although your Committee are sanguine as to the success of the Museum, they have deeply to regret the want of proper accommodation for it, which results from sharing the room occupied by the Loan Board, and presents an almost fatal obstacle to its advancement. As a means of aiding the Secretary, who cannot be expected to be technically acquainted with the many and various objects likely to flow into the Museum, several gentlemen, well fitted to the task, have kindly consented to arrange and supervise the materials in the several departments, thereby lightening the labours of that officer and ensuring correctness.

Evening Meetings.

"Your Committee advert with entire satisfaction to the Evening Meetings held monthly for the free discussion of subjects connected with the labours of this Society. At these, several highly instructive topics have been discussed, and much knowledge gained in the Native Practice of Medicine, the Native Pottery Works, and of the Siphalese Hemp: inquiries have also by the same means been directed to the introduction of the Mulberry and Silkworm (*Bombyx mori*), the Cultivation of the Indigenous Silk-spinning Larvæ and wild Bees, and to the Mineral Resources of the Island, &c.

Quarterly Meetings.

"The following Papers have been read at the several Quarterly Meetings of the Society, showing the various fields to which the labours of their contributors have been directed:—

1. *A Catalogue of Tamil Books*, by S. Casie Chetty, Esq.
2. *Notices of various Rock Inscriptions in the N.-W. Province*, by A. O. Brodie, Esq.
3. *Hints for forming a Collection of Lepidopterous Insects, with a list of Indigenous Diurnal Lepidoptera*, by Edgar L. Layard, Esq.
4. *On Buddhism*, by the Rev. D. J. Gogerly.
5. *Sketches in the Natural History of Ceylon.—Entomology: on the Genus Papilio*, by E. L. Layard, Esq.
6. *On the Agriculture of the Sinhalese, &c.*, by R. E. Lewis, Esq.
7. *On Ceylonite*, by Lieutenant Henderson, C.R.R.
8. *Sketches in the Natural History of Ceylon.—Ornithology: on the Genera Hirundo and Bucco*, by Edgar L. Layard, Esq.

“Early in the year a most interesting answer was received to a letter on Buddhism addressed to the China Branch of the Royal Asiatic Society, and your Committee trust that the subject will not be suffered to drop after the courteous tone of the letter from Mr. Gutzlaff.

Antiquities.

“In the knowledge of the antiquities of our Island, some advances have been made through the exertions of one of our Members and a friend at Kandy, and your Committee had hoped that translations would have been received from Calcutta in time for the present Meeting; these have only been delayed accidentally, not from want of ability to decipher them, and now that a clue is obtained to these fast fading records of past ages, it is hoped that increased exertion on the part of those of our Members who may have it in their power to procure copies of the many inscriptions buried in the jungles, will open a fresh field for the investigation of the learned and curious.

Books.

“The Librarian will read to you the List of Books purchased by and presented to the Society during the past year, amounting to 26 volumes and 32 numbers of periodicals.

Money.

"In alluding to the Treasurer's accounts, which show a balance in his hand of £16.0s. 6d., your Committee beg to inform you that in future the Society will have to bear the expense of printing its Journal, as Government can no longer undertake the work which it has hitherto so liberally done.

Meteorology and Statistics.

"Your Committee observe with regret that the Meteorological and Statistical Committees have failed to furnish any reports for the past year, the Secretary of these bodies having been left unaided by the Members ; and having been himself prevented from completing any of his labours by causes over which he had no control, has deemed silence the better course to adopt.

"He has, however, handed to your Committee abstracts of the Meteorological Diaries kept at Batticotta and Trincomalee, during the years 1847 and 1848, which are now laid on the table, together with a Register of Temperature, &c., kept at Puttalam by A. O. Brodie, Esq., and these your Committee advise should be printed amongst the Society's Proceedings.

Dr. Gardner ; Sir J. E. Tennent.

"Before concluding, your Committee would revert with feelings of the deepest regret to the sudden death of one of the Members of this Society, one whose name will always be intimately connected with the Scientific Literature of the Island, whose early premature death has left immatured a vast accumulation of botanical gleanings, the fruit of several years of unremitting toil.

"Although the unvaried zeal with which Dr. Gardner pursued his botanical researches, and his absence from the neighbourhood of the Society left him no time or opportunity to appear personally amongst us, still his constant expressions of sympathy and support render evident the interest he took in the efforts of the Society for the promotion of the public good, and the few pamphlets he presented to our Library some short time since were accompanied with a promise that in future a copy of all his publications should be kept for its use.

“If the materials collected by our departed fellow Member and friend be at some future time given to the world, your Committee beg to record their opinion that this Society should procure two copies of the work.

“Another source of regret is to be found in the approaching departure from the Island of our respected President, Sir J. E. Tennent. Ever anxious to promote the interests of the Society, and of science generally, his loss will be felt by all who desire to forward the social and intellectual progress of the Colony.

Conclusion.

“In conclusion, your Committee, while thus completing their duties, would express the hope that each succeeding Anniversary may witness that continued and perfect unanimity of purpose amongst the Members of this Society, which alone can lead to real usefulness and permanent prosperity. The work has been but commenced: much has yet to be done; but looking at the present position of the Society, your Committee are fain to believe that success will attend a continuation of the efforts which have hitherto been made.”

The report was unanimously adopted.

7. The Treasurer laid on the table his Accounts for the past year, which were received and passed.

8. The Librarian laid on the table a List of the Books presented to and purchased by the Society during the last year.

9. After some discussion relative to the correspondence with the Hongkong Society, the Rev. D. J. Gogerly was requested to communicate with Mr. Gutzlaff in the name of the Society.

10. The following motion was made by Edgar L. Layard, Esq., and seconded by Major Lushington:—

“That the Society do record its sense of the loss which this Society, as well as the public, has sustained by the premature death of George Gardner, Superintendent of the Botanical Gardens at Péradeniya, and a Member of the Ceylon Branch of the Royal Asiatic Society.”—Unanimously agreed to.

Resolved,—That the above resolution be communicated by the Secretary to Dr. Gardner's family.

11. Moved by R. E. Lewis, Esq., seconded by J. E. Middleton, Esq. :—

"That the thanks of the Society be given to the Officers of the Society for the past year."—Agreed to unanimously.

Resolved,—That the following gentlemen be the Officers of the Society for the ensuing year :—

Patron.

The Right Honourable Lord Viscount Torrington.

Vice-Patrons.

The Honourable Sir A. Oliphant, Chief Justice.

The Right Rev. James Chapman, D.D., Bishop of Colombo.

The Hon. Mr. Justice Stark.

President.

The Honourable C. J. McCarthy, Esq.

Vice-President.

Rev. D. J. Gogerly.

General Committee.

F. Willisford, Esq., M.D.

Dr. J. B. Misso.

J. E. Middleton, Esq.

J. O'Halloran, Esq.

James Steuart, Esq.

Rev. G. Muttukistna.

C. Caldwell, Esq.

with power to add to their number.

Treasurer and Librarian.

J. Capper, Esq.

Secretary.

E. L. Layard, Esq.

Museum.

The following gentlemen to act as Curators in the several departments :—

Geology and Mineralgy, Mr. Rudolph Gyax.

Conchology, Land and Fluvial Shells, F. Layard, Esq.

Do. Sea Shells, Corals, &c., J. E. Middleton, Esq.

Natural History generally, E. L. Layard, Esq.

Numismatics, Mr. Justice Stark.

Arts, Manufactures, &c., J. Capper, Esq.

DR. THE ASIATIC SOCIETY in account with the Treasurer, to February 28, 1849. CR.

1848.		March 1, 1848.		CR.	
		£.	s. d.	£.	s. d.
Paid Peon in charge of room for five months	...	1	10 0	By Balance on hand as per last account	...
" Clerk for April and May	...	0	6 0	" rendered	16 6 10½
" for Bookbinding	...	0	6 0	" Amount of Subscriptions received	...
" for Stationery	...	2	18 0	" Amount of Entrance Fees received	35 14 0
" for Printing Circulars, Notices, &c.	...	1	6 0	" Proceeds Sale of 45 Copies of the Asiatic	6 6 0
" for Freight and Carriage of sundry Books,	...	4	0 6	" Society's Journal	...
" Parcels, &c., from Calcutta, Batavia, and	...				4 1 0
" by overland	...	3	12 8		
" remittance to Calcutta on account of	...				
" Books, &c.	...	12	0 0		
" remittance to Madras for Lithographs	...	5	10 3		
" for Colouring Diagrams for Journal	...	1	5 0		
" Postages to and from Calcutta, Singapore,	...				
" China, Madras, and London	...	2	16 5½		
" for Books purchased in London and Ceylon	...	4	2 6		
" to the Museum Fund, as agreed	...	7	0 0		
		46	7 4½		
Balance	...	16	0 6		
Total	...	£62	7 10½	Total	...
N.B.—Arrears of Subscriptions for		£62		7 10½	
1848	...	£5	5 0		
of Entrance Fees	...	1	11 6		
		£6	16 6		

Colombo, February 28, 1849.

E. E.

JOHN CAPPER,
Treasurer.

LIST OF BOOKS, PAMPHLETS, &c.,

Presented to and Bought by the Society during 1848.

Davis's Chinese Novels	...	...	Vols. 1
Maurice's Ancient History of Hindostan	...	...	2
Kindersley's Hindu Literature	...	...	1
Lasson's Bactrian Coins	...	...	1
Kelly's Oriental Meteorology	...	...	1
Bentley's View of Hindu Astronomy	...	...	1
Handbook to Egypt and India	..	...	1
Moon's Botany	...	...	1
Milburn's Oriental Commerce	...	...	1
Parke's Travels in Africa	...	...	1
Sir W. Malcolm's History of Persia...	...	...	2
Hoffmaister's Travels in Ceylon and India	...	...	1
Campbell's Field Sports of Ceylon	...	...	2
A Treatise on Diamonds	...	...	1
The Pearl Fishery of Ceylon	...	...	1
A Treaties on Pantheism (Dutch)	...	...	1
Reports on the Financial Condition of Ceylon	...	...	1
Blue Book of Ceylon	...	...	1
Calcutta Review	...	...	Nos. 4
Journal of the Asiatic Society of Bengal	...	...	12
Journal of the Eastern Archipelago...	...	...	12
Journal of the Geological Society of London	...	...	4
Journal of the Statistical Society of London	...	...	4
A Geological Map of England.			

LIST OF MEMBERS.

Alvis, J. De	Mooyaart, J. N.
Armitage, John	Murdoch, John
Bessell, H.	Muttukistna, Rev. E.
Bishop of Colombo, the Right Rev.	Nelson, J. B.
Boake, Rev. B.	O'Halloran, J. C.
Bowker, John	Oliphant, Sir A.
Braybrooke, F. G.	Ondaatjie, J. M.
Brodie, A. O.	Palm, Rev. J. D.
Caldwell, E. C.	Percival, Rev. P.
Capper, John	Perera, H.
Chetty, John C.	Pole, H.
Chetty, Simon C.	Selby, Hon. H. C.
Davies, Rev. J.	Sillery, H., C.R.R.
Dawson, Rev. C. C.	Smith, D.
Dawson, Robert	Smith, James
Dickson, Rev. W.	Soysa, L. De
Dodsworth, B.	Staples, H. J.
Gogerly, Rev. D. J.	Stark, Hon.
Grace, A.	Steuart, Dr.
Gygax, Dr. R.	Steuart, George
Kessen, Rev. Dr.	Steuart, James
Layard, E. L.	Taylor, W. S.
Layard, F.	Tennent, Sir J. E.
Lewis, R. E.	Torrington, His Excellency
Lister, S.	Viscount
Livera, F. De	Twynam, W.
Lushington, Major	Whitehouse, E. L.
MacCarthy, Hon. C. J.	Williams, R. E., R.A.
McVicar, Rev. Dr.	Willisford, F., M.D.
Middleton, J. E.	Worms, G.
Misso, Dr. J. B.	Worms, M.

REGISTER OF TEMPERATURE KEPT AT PUTTALAM FOR THE TWELVE MONTHS ENDED JULY 31, 1848.

	9 A.M.			Noon.			3 P.M.			Highest.	Lowest.	Mean of whole.	Range.	No. of Rain days.	Thunder days.	Thunder or Lightning at Puttalam.	Wind.				REMARKS.
	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.								S.W.	N.E.	Other Directions.	Calm.	
1847.																					
Aug....	83.75	79.25	81.38	85.75	80.5	83.07	85.5	80.5	83.09	85.75	79.25	82.51	6.5	3	2	0	31	0	0	0	Thermometer in a vernacular run-ning R. and W., slightly protected by leadjan.
Sept. ..	82.0	79.0	80.363	84.0	79.0	82.786	83.5	77.5	82.622	84.0	78.0	84.89	11.0	5	3	1	30	0	0	0	
Oct....	82.0	76.7	88.33	84.5	80.0	82.64	84.5	78.2	82.0	84.5	76.7	81.66	7.8	18	13	4	21	2	0	0	
Nov....	80.75	72.0	78.15	83.25	78.0	80.44	85.0	78.0	80.65	85.0	72.0	79.75	13.0	24	15	5	11	4	7	8	
Dec....	81.0	74.25	77.687	83.5	75.5	79.711	84.75	76.0	77.29	84.75	74.25	78.229	10.50	19	11	3	0	10	19	2	
1848..																					
Jan. ...	79.0	73.0	75.5	82.5	77.25	79.816	83.0	78.75	81.736	83.0	73.0	79.017	10.0	2	1	0	0	31	0	0	
Feb....	81.5	76.0	78.938	86.5	77.5	82.68	86.5	77.5	81.66	86.5	76.0	81.093	10.5	8	10	0	0	22	2	4	
March..	86.0	80.5	82.988	89.0	83.0	86.5	91.25	83.5	87.9	91.25	80.5	85.796	10.75	4	16	1	5	4	19	3	
April..	86.5	78.0	83.226	89.5	82.0	86.423	90.0	72.0	86.25	90.0	72.0	85.299	18.0	11	20	4	21	0	6	3	
May ...	84.5	77.75	81.094	86.0	76.5	83.37	86.0	78.0	83.123	86.0	76.5	82.529	9.5	10	4	3	30	0	0	1	
June ..	83.5	81.25	82.125	84.75	82.5	83.275	85.5	83.0	83.691	85.5	81.25	83.03	4.25	4	0	0	29	0	0	1	
July ...	82.5	76.0	79.923	86.0	78.0	82.11	86.5	78.5	82.186	86.0	76.0	81.406	10.5	4	3	0	27	0	0	4	
	...	...	80.142	...	...	82.735	...	...	82.675	91.25	7.20	81.851	91.25	9.33	8.17	1.8	205	73	53	34	

Mean Average Temperature of Puttalam during the above period, as obtained by calculation = 79.718.

REMARKS.

August, 1847.—Temperature equable, weather pleasant, sky clear, with detached cirrus and cirro cumulus; in the evenings clouds collect to the N. and N.E., in which direction thunder was heard on two nights. S.W. wind prevalent, generally gentle, and interrupted by calms at night and in the morning; tanks dry.

September.—Weather very pleasant, sky clear, two strata of clouds constantly observed, the lower drifting along with the monsoon, the upper stationary. Rain (with one exception) in the form of scarcely perceptible showers. Thunder heard on three occasions, far to the east. S.W. blowing continuously from 2nd to 11th, wind very high, at night and in the mornings calms frequently observed; tanks dry.

October.—Very rainy month, thunder observed on fourteen days, but only on two occasions did the storm pass over Puttalam. S.W. still prevalent, but interrupted by those from the N. and N.E. and also by calms, which occur almost every morning and during the night. Between the rainy days atmosphere astonishingly clear, distant objects appearing very sharply defined, false sunsets, and halos observed on several occasions; appearance of the sky in the evening very beautiful.

November.—Rain almost every day, frequently heavy; lightning observed very frequently in the evening, generally towards the south, sometimes all round; only five storms approached Puttalam; wind variable, with frequent calms at evening, morning, and during night.

December.—A rainy month; lightning far to the south frequently observed during the evening; three storms passed near Puttalam; first ten days dull and cloudy, after that generally clear; wind variable, generally from the N. The S.W. has quite ceased; weather delightful in the intervals between the rainy days.

January, 1848.—N.E. blowing continuously, at times strongly ; sky very clear ; heavy dews at night, mornings chill, lightning occasionally observed far to the south in the evening ; little rain.

February.—Wind blowing nearly continuously from the N.E., and gently, especially in the mornings, veering to the E. at night. Rain fell on ten days, but only in slight showers, although the appearance of the sky about sunset was frequently very lowering ; in the evening distant lightning to the south and all round observed on ten days.

March.—Wind generally blowing from the N., shifting constantly a little to the E. or W. ; frequent calms in the morning, sky generally clear ; only one storm passed over Puttalam, although distant lightning was observed on sixteen evenings, generally towards the N. and N.E., latterly also towards the S. and S.E.

April.—The S.W. again the prevailing wind, blowing gently in the earlier part of the month, more violently afterwards ; evenings frequently threatening, and lightning observed on twenty occasions to the S.S.E., and all round ; four storms approached Puttalam.

May.—S.W. monsoon blowing steadily and rather strong, sky cloudy throughout the latter part of the month, distant lightning seldom observed ; three storms accompanied by violent wind visited the station.

June.—S.W. blowing continuously and strong, sky cloudy ; four scarcely perceptible showers ; calms.

July.—S.W. still blowing, generally rather strong, sky cloudy, calms in the morning at commencement and end of month ; in the middle of the month four boisterous days with heavy rain.

A. OSWALD BRODIE.

Puttalam, August 12, 1849.

ABSTRACT OF A METEOROLOGICAL REGISTER KEPT AT BATTICOTTA, NEAR JAFFNA, DURING 1847 AND 1848.

MONTH.	THERMOMETER.		WET BULB THERMOMETER.			BAROMETER CORRECTED.		AMOUNT OF RAIN.	COURSE OF WIND.	STRENGTH OF WIND.	CLOUDS, &c.	GENERAL REMARKS.
	Mean.	Max.	A.M. h. m. 9 30	A.M. h. 12	P.M. h. m. 3 30	Max.	Min.					
1847.												
January ...	78.0	80.1	5.3	5.8	6.5	30.032	29.936	1.57	N.E. & E.N.E.	2.4	Flying clouds and cloudy	Heavy dew daily. Three rainy days.
February ...	81.2	85.3	4.7	7.1	3.5	30.051	29.897	1.70	Variable from S.E. to N.W.	2.3	Flying clouds	Fair, with heavy dew.
March ..	82.1	85.2	5.3	6.3	6.7	29.966	29.859	1.42	E.N.E. to N.E.	1.3	Flying clouds and cloudy	Dew lighter. Four showery days and thunder.
April ...	84.6	87.4	5.4	6.4	6.6	29.910	29.807	2.06	E. & S.W.	3.5	Flying clouds	Fair, six days thunder, five days rain. Little dew.
May ...	85.5	87.6	6.1	6.7	6.1	29.879	29.750	0.24	S.W. & W.S.W.	3.4.6	Cloudy	Mostly hazy, with one or two thunder showers.
June ...	84.6	87.2	2.3	7.7	7.0	29.786	29.671	1.80	S.W. & W.	2.4.5	Cloudy and flying clouds	Hazy, with three rainy days.
July ...	83.7	86.7	5.2	6.2	6.6	29.790	29.698	0.96	S.S.W. & S.W.	2.3.4	do. do.	Six days rain and thunder. Generally hazy.
August ...	83.8	87.3	4.6	5.3	6.8	29.807	29.709	1.00	do	2.3.4	do. do.	Two days rain, three thunder. Mostly hazy.
September ...	82.4	86.4	4.4	7.5	6.2	29.834	29.693	0.09	S. & S.W.	4.5.6	Cloudy	Generally hazy, with thunder.
October ...	82.6	83.6	3.8	3.0	4.4	29.877	29.768	18.38	S.S.W. & S.E.	1.3	Light flying clouds	Twelve days thunder, rain, and lightning. } Dew
November ...	80.2	82.3	1.9	2.6	3.3	29.908	29.829	11.62	S.E.N. & N.E.	2.4	Flying clouds	Five days thunder. } morning.
December ...	78.6	79.6	2.9	3.3	3.2	29.905	29.804	13.26	N.E. & N.W.	3.4.6	do.	Eleven days rainy.
1848.												
January ...	78.2	81.4	4.4	5.4	6.1	29.965	29.903	1.35	N.N.E. & N.E.	2.3	Cloudy generally	Two days light showers. Mostly fine, with dew.
February ...	79.9	82.3	5.9	5.9	6.5	30.033	29.842	0.75	N.E. & E.N.E.	2.3.4	Flying clouds	Five days light rain, fine, with dew.
March ...	82.8	86.4	5.8	7.2	8.6	29.919	29.804	0.95	Variable	1.3	Clear, with some flying clouds	Fair, with haze and dew A.M.
April ...	85.4	88.4	5.4	5.2	6.2	29.883	29.725	10.96	do.	3.4.5	Cloudy	Thunder showers. Hail fell once.
May ...	85.1	86.7	4.9	5.9	6.1	29.800	29.711	2.80	S.W. & S.S.W.	3.5	Flying clouds during all the month	Hazy, with one or two squalls of rain.
June ...	84.5	87.2	5.2	6.6	6.8	29.786	29.702	0.08	W.S.W. & S.W.	3.4.5	Clear, with occasional clouds	Hazy, but fair. One thunder squall.
July ...	82.9	85.6	4.1	5.3	5.7	29.786	29.700	1.76	S.W. & W.	4.5.6	Cloudy	Hazy, with thunder and rain occasionally.
August ...	82.4	85.7	3.6	5.3	5.7	29.791	29.705	2.35	S.S.W. & S.W.	2.3.4	do.	do. do.
September ...	82.7	86.1	4.1	5.7	5.9	29.855	29.035	5.14	W.S.W. & W.	2.3.4	Cloudy and flying clouds	Thunder seven days, rain seven days. Hazy.
October ...	81.5	83.7	3.3	3.9	4.5	29.888	29.793	2.24	S.W. & W.	3.4.4	Flying clouds	Rain nine days, with some thunder. Hazy.
November ...	79.1	81.2	2.7	3.5	4.0	29.926	29.159	18.72	Variable	3.4.5	do.	Rain fourteen days. Little dew.
December ...	78.4	80.7	4.2	5.6	5.9	29.737	29.887	4.40	N. & N.E.	4.5	Cloudy	Rain fourteen days.

LAWS OF THE ROYAL ASIATIC SOCIETY OF CEYLON.

1. The Royal Asiatic Society of Ceylon is instituted for the investigation of the History, Literature, Religion, Arts, and Natural History of Ceylon.

2. The Society shall consist of Resident, Honorary, and Corresponding Members.

3. Members residing in any part of Ceylon shall be considered Resident.

4. Persons who may contribute to the objects of the Society in a distinguished manner are to be eligible as Honorary Members.

5. Persons not resident in Colombo may upon special grounds, and with the recommendation of the Committee, be elected Corresponding Members.

6. Honorary and Corresponding Members are to be admitted to all the privileges of the Society, but are not to vote at its Meetings, or be elected to any of its offices, or take part in its private business.

7. All Members, whether Resident, Honorary, or Corresponding, shall be elected by Ballot at a General Meeting; it is required that the names be forwarded to the Secretary fully two weeks previous to their proposal, in order that he may give notice of the same to the Members of the Society.

8. No Candidate shall be elected unless he has in his favour three-fourths of the Members voting.

9. The Office Bearers of the Society shall consist of a President, Vice-President, a Secretary, a Treasurer, and Librarian, who, together with a Committee of not less than five Members, shall have the direction of the affairs of the Society, subject to the Rules and Regulations passed at General Meetings.

10. The Office Bearers and Committee shall be elected annually at the Anniversary Meeting.

11. Three shall form a quorum of the Committee, and five of a General Meeting.

12. The functions of the Office Bearers shall be as follows :—

a. The President shall preside at the Meetings of the Society and of the Committee, keep order, state and put questions, and cause the Laws of the Society to be enforced.

b. The Vice-President shall, in the absence of the President, exercise all the functions of his office.

c. The Secretary shall arrange and attend the Meetings of the Society and of the Committee, and record their proceedings, and shall exercise a general superintendence under authority of the Committee.

d. The Treasurer shall receive and pay out all moneys on behalf of the Society, keep an account thereof, and submit a statement of the pecuniary affairs of the Society to the Anniversary Meeting.

e. The Librarian will take charge of the Library, keeping a list of the Books, giving them out to Members in the manner directed by the Committee, and seeing that they are returned in proper time and in good condition.

13. Each Resident Member shall pay to the Funds of the Society on admission a fee of ten shillings and sixpence, and an annual contribution of one pound and one shilling.

14. Honorary and Corresponding Members shall be admitted without paying any entrance fee or annual subscription.

15. The General Meetings of the Society shall be held in the months of February, May, August, and November, and at such other times as may be resolved on and duly notified to Members by the Secretary.

16. The course of Business at the General Meetings shall be as follows :—

- a.* The Minutes of the preceding Meeting shall be read and signed by the President or whoever may in his absence occupy the chair.
 - b.* Any specific or particular business which the Committee may have appointed for the consideration of the Meeting shall be proceeded with.
 - c.* Candidates proposed and seconded shall be ballotted for.
 - d.* Donations shall be laid before the Meeting.
 - e.* Papers and Communications shall be read and discussed.
17. Committee Meetings shall be held once a month, at convenient times.
18. There shall be Monthly Evening Meetings held for discussing Papers read at General Meetings, and for promoting the general objects of the Society.
19. Communications and Papers read may be printed at the expense of the Society, under the title of the "Journal of the Asiatic Society of Ceylon," but not until the Meeting next following that on which they were read, when it shall be decided by vote whether they be so printed or be kept amongst the manuscript records of the Society, or be returned to the author if he so desire it.
20. That every Resident Member shall be entitled to receive two copies of the Society's Journal, and every Honorary or Corresponding Member receive one copy; the remainder to be sold or otherwise distributed.
21. A special Meeting may be called at any time by the General Committee, or by the Secretary, on the requisition of five Members of the Society, due notice being given by the Secretary of the time and object of the Meeting.
22. Sub-Committees or Committees of Inquiry may be formed for any specific object or research, but these must be named at a General Meeting.
23. An Anniversary Meeting shall be held for the purpose of electing new Office Bearers and Committees, to receive the various reports of Committees for the past year, and to receive and pass the Treasurer's accounts.

PRINTED AT
THE GOVERNMENT PRINTING WORKS,
COLOMBO, CEYLON.

ROYAL ASIATIC SOCIETY, CEYLON BRANCH.

REMARKS ON SOME ANALYSES OF THE COFFEE OF CEYLON, WITH SUGGESTIONS FOR THE APPLICATION OF MANURES.

BY DR. RUDOLPH GYGAX.

(*Read June 9, 1849.*)

HAVING had my attention drawn to an account of some analyses of the Jamaica coffee berry, made by Mr. Herepath, the Liverpool chemist, I have paid some little attention to the subject of the coffee plant of this Island, forming as it does so very important a feature in the resources of this Colony. The desire that I thus felt for obtaining some information regarding the constituent parts of the Ceylon tree and its fruit was heightened by a knowledge of the fact that not a few of those coffee estates which once gave good promise of success are now in a very precarious state of production.

I much regret that the means at my disposal have not allowed me to carry out any quantitative analysis, but the results of my labours are sufficiently accurate for present purposes. I have analysed the wood and fruit of trees from two different localities, as well as the ashes of some plants sent me from the Rájawella estate, near Kandy, and they all tend to bear out the result of Mr. Herepath's inquiries. Placing the substances traced in the coffee plant in the order

in which they occur in the greatest quantity, they will stand thus :—

Lime.
Potash.

Other acids.

Magnesia.
Phosphoric acid.

Of these, lime is by far the most prominent, forming about sixty per cent. of the whole.

I cannot help, therefore, arriving at the conclusion that to cultivate coffee with any degree of success the first-named substance must be present in the soil, or, if not present, must be supplied to it by some process.

Now, it is a singular fact that the rocks and soils of Ceylon are greatly deficient in alkaline matter, and taking this view of the case, one no longer wonders that many estates cease to produce coffee. That all, or nearly all, the plantations did in their first year or two of bearing produce liberally in fruit may readily be accounted for by the fact that the alkaline poverty of the soil was enriched by the burning of the vast quantities of timber which lay felled on all sides. Whilst this temporary supply lasted, all was well with the planter. Heavy rains and frequent scrapings of the steep land by the mamoty soon dissipated this scanty supply, and short crops are now the consequence.

But nature, ever bountiful, ever ready to compensate for all deficiencies, has provided to our hands a ready means of remedying this evil of the soil by scattering throughout most parts of the interior supplies of dolomitic limestone. The dolomite of Ceylon is not pure,—far from it,—being mixed freely with apatite or phosphate of lime. Even in this very accidental circumstance the coffee planter is aided; for the phosphoric acid thus combined with the limestone is the very substance required in addition. Some of the finest properties in the Island are situated on a limestone bottom, and these no doubt will continue to yield abundant crops for a very long period.

It has been urged against this opinion, that in some districts where coffee planting has proved a complete failure, dolomite is found most abundantly; but I have very little doubt that the dolomite here alluded to is only magnesian limestone, of which a great deal exists in the Central Province, and which is most inimical to the coffee bush.

I am aware that already several manures have been tried on coffee with varying degrees of success. Guano has, I believe, quite failed, and is, besides, very costly. Cattle manure is said to be effective, and no doubt it is; but it is a costly and troublesome affair. Bones, ground fine, are now being tried, though they cannot but prove most expensive, especially when imported.

A ton of bone dust consists of:—

Animal matter	...	746 lb.
Phosphates of lime, &c.	...	1,245 lb.
Carbonates of lime, &c.	...	249 lb.

The virtue of bones lays in the phosphates far more than in the animal matter, and thus their action on soils is felt for many years after their application. The Singhalese cultivators of paddy about Colombo and Galle appear to have been long aware of the fertilising effects of this kind of manure, and import the article in dhonies from many parts of the coast. They bruise them coarsely before applying them.

The partially decomposed husks of the coffee berry have been tried for some years, and successfully; but they are difficult of collection and bulky to remove from one part of the estate to the other.

In Europe it would appear that little is yet known as to the causes of the fertilising effects of oil-cake: some suppose them to arise mainly from the oil left by the crushing process, but this is not at all clear. I do not, however, see that we must look for much assistance from poonac as a manure for coffee; for the cocoanut tree it is doubtless most

valuable. But we have yet to learn that beyond supplying so much more vegetable matter, it helps the action of the soil on the roots of the coffee bush, which, after all, is what is really required.

For the proper application of the dolomite to land as manure, it should be freely burnt in a kiln with a good quantity of wood, the ashes of which should be afterwards mixed with the burnt lime, and the whole exposed for several days to the action of the air, sheltered of course from the weather. The mixture should be applied just before the setting in of the monsoon rains ; if the land be tolerably level the lime may be scattered broadcast on the surface, though not quite near the plants. When the estate to be manured is steep, then the substance to be applied should be placed in ridges cut crossways to the descent of the slopes.

About one hundredweight to the acre would be ample for most lands ; some may, however, require more. The contents of the husk-pits might advantageously be mixed up with the burnt lime when a sufficiency of it has been saved.

A DESCRIPTIVE CATALOGUE OF THE
WOODS OF CEYLON.

BY JOHN CAPPER.

(Read August 25, 1849.)

THICKLY covered as the greater portion of this Island is with dense forests or jungle, it cannot be matter of surprise that its woods should be found in the greatest variety. This fact seems to have been noticed in almost every published account of the Island. All the works which treat of Ceylon make allusion to its many useful and ornamental woods, though very few of these have entered upon any detail. Indeed, we can glean but scanty information even from the best of these writers.

Knox, in his account of Ceylon, tells us but little on this subject, and the same may be said of Perceval; whilst Cordiner gives merely a list of some dozen kinds of woods. Bertolacci tells more than any other writer of the state and value of the timber trade of the Colony, though he does not seem to have been acquainted with many varieties of woods. He considered that by the acquisition of the Kandyan territory the British had opened the way to great resources as regards timber, and beyond a doubt the vast tract of country stretching from the Kandyan mountain range through Bintenna, northwards and eastwards, comprises forests full of most valuable timber. This source of wealth is, however, at present nearly closed against us from the utter inability of the natives to transport any produce of weight to the sea coast, on account of the impassable state of the Mahaveli-ganga, a noble river which, according

to Mr. Brooke's report, might easily be rendered navigable for one hundred and thirty miles from Trincomalee, and which runs during a great part of its course through a dense forest of ebony, satinwood, and halmililla.

A later writer on Ceylon—Mr. Bennett—enumerates ninety varieties of woods by their native names, but enters into no detail whatever as to their particular uses or localities, though he calls them "Kandyan woods."

A list of about two hundred varieties was taken home by the late Sir A. Johnstone, and by him presented to the parent Society, which afterwards, on the appointment of Mr. Stewart Mackenzie to this Government, requested him to collect and send the Society specimens of, and information regarding the woods. This was not done, and I believe nothing more has been attempted, save a few small collections by various individuals; amongst these may be mentioned the specimens and catalogue presented to this Society by Mendis Muhandiram.

In offering a few remarks accompanying the catalogue which I have prepared of the woods of this Island, I consider that the subject is no more than barely touched upon. The few facts, however, now thrown together may be the means of inducing some of our many outstation members to contribute to our stock of information.

The first step towards an account of Ceylon timber is undoubtedly to form a catalogue. The list with this I have compiled by the aid of others. It comprises not less than four hundred and sixteen varieties, which, it is believed, are nearly all those which have been observed, though it is possible that in the dense forests of Bintenna there may be yet many new varieties.

But a small portion of these are known by English names, and I have as yet been able to find the botanical names of very few. A column is added to show the comparative

value of these woods for useful purposes, in which they are numbered 1 to 4.

Those numbered 1 are the most valuable, either for ornamental work or for building purposes, and able to stand long exposure to weather.

The woods marked 2 are those which, though good, are not so strong nor so well able to bear exposure out of doors.

No. 3 are such as are only used for inferior purposes, and seldom, if ever, employed for house-building, except perhaps by the natives. They are used chiefly for packing-cases, dry casks, ceilings, stands for goods, common door or window frames, partitions in rooms, or similar purposes.

No. 4 comprises all those woods which are unfit for carpenters' work, and are either quite useless, or only employed for constructing mud and stick houses or other rough and temporary jungle work.

Of the four hundred and sixteen varieties, there are:—

33 of No. 1.	|	162 of No. 3.
82 of No. 2.	|	139 of No. 4.

Of those included in the first class, the most prominent are the calamander, the *kadumbériya*, the ebony, and satinwood, the two latter being best known, as they are found in sufficient quantities to enable them to be used for building or other purposes, as well as for ornamental works.

Ebony is too well known to require description. It grows chiefly in the Northern and Eastern Provinces, but it is also met with in the Kandyan district: a large forest of it existed at one time in the vale of Dumbara, which has since given place to coffee bushes. It is not used for any purposes in Ceylon beyond furniture and articles of ornament, but it is exported largely to Europe at times. It is far more difficult to work up than satinwood, and also more brittle.

The *kadumbériya*, or bastard ebony, is of a fine black colour, deeply and richly veined with red, and admirably adapted for furniture; it is excessively hard, but not so

plentiful as ebony. It is found in the same districts as the preceding.

Calamander is valuable, not only on account of its beauty, but also by reason of its increasing scarceness; it is only to be met with in the forests near Ratnapura and in the Pasdun koralé, and even there it is found to be very small. The tree is of very slow growth, the natives believing that one of an ordinary size is at least three hundred years old; it is pretty certain that in a very few years there will not be sufficient calamander in Ceylon to make a single pair of couches.

The satinwood is more plentiful in certain localities than either of the preceding: it is found chiefly in the Northern, North-Western, and Eastern Provinces, growing generally to the height of one hundred feet. The variegated or flowered satin is the most valuable for furniture, but it is found in comparatively small quantities—probably not more than three per cent. of the trees on the east coast yield this quality; but in the country about Puttalam it is said to prevail to the extent of fifteen or twenty per cent. Satinwood is admirably adapted to all purposes requiring great strength and resistance to weather. It is much used for piles of bridges, and is almost, if not quite, the only wood which will stand as teeth in cog-wheels of machinery,—ebony, though harder, being too brittle. In the Eastern Province this wood is most abundant, and nearly all the houses are built of it, even down to the flooring.

There are some other woods which would appear to be well adapted for ornamental furniture work, though, with the exception of the *nedun* wood, not yet employed for such purposes: these are the *nedun*, the tamarind, and the *del* woods, all of which, save the last, are hard, of a close grain, admitting of a fine polish, and tolerably abundant in the Western and Southern Provinces.

After the four first-enumerated woods may be placed others equally useful, though less valuable, because more abundant, such as the teak, jak, *kina*, *milila*, *súriya*, *hal-milila*, *ná*, &c. Of these, the only one employed for furniture is the jak, which, when well selected and polished, very frequently equals good mahogany. The want of grain in the others named alone prevents them from being used for similar purposes, as they are equally compact in texture and smooth under the tool.

It is doubtful if teak is indigenous to Ceylon, but however this may be, the chief supply is derived from Moulmein and Cochin, though a good deal is to be met with in various parts of the Western and Southern Provinces, having been planted by the Dutch Government to a considerable extent. The quality of this cultivated timber is superior to that of the imported, though it does not often arrive at the same size. For quality the Ceylon teak stands first, the Cochin second, and the Moulmein timber last.

It will not be easy to find a tree more generally useful than the jak, if we except the cocoanut tree. Scarcely a native garden of any size is to be found without at least one spreading its ample shade over the space before the dwelling, and yielding its abundant harvest of fruit. Jakwood, besides being most valuable for furniture, is admirably adapted for all purposes of house or boat-building. It stands the action of the weather and attack of worms, it lasts longer under water, when used in boats, than does teak, and it is far superior to that wood for upper planking of boats, where it is liable to come in frequent collision with other bodies. For this quality of resistance jak is only inferior to satinwood. *Domba*, being cheaper, is usually employed to form the stems and stern posts of large cargo boats. The jak tree hollowed out makes an excellent canoe; indeed, there are very few purposes for which this wood is not adapted.

Milila is superior to jak for some purposes, being of a rather closer texture. It is much preferred for frames of doors and windows, as it is not liable to warp or shrink; it is, however, rather more scarce than jak, and in the Western and Southern Provinces it is comparatively rare.

Hal-milila is a most useful wood for casks, especially as packages for oil or arrack; indeed, there is no other wood in sufficient quantity adapted for the same purpose. It is close grained, free from resin, and very pliable in the cooper's hands. It is, moreover, a very clean timber, and does not impart colour or taint to any liquid. Teak has been sometimes used for oil casks on the coast, but it is not liked here, as from its brittleness it is more liable to fracture. *Hal-milila* grows to a great height, and usually very straight; it is used frequently for beams of a large span, though not preferred for this purpose. It is also in great request amongst carriage-builders for spokes of wheels and several parts of the carriage body. The principal supply to the Colombo market comes from Trincomalee and Batticaloa, where, especially between the latter place and the Bintenna country, immense forests of it are found adjoining rivers, without the aid of which the cost would be greatly enhanced in conveying it to the sea coast. The timber contractors employ in the felling of this and other woods the village Veddás of Bintenna, and by their aid supply the owners of small vessels and dhonies, who are mostly Moormen, and these bring it round to Colombo, the profit on the transaction giving them a very fair freight for their vessels.

The *kina* is another lasting and useful wood, and from its great length and straightness is generally employed for masts and yards of vessels. It is to be met with in all the maritime provinces of the Island.

The principal use of the *súriya*, or Persian wood, is for

the shafts and other bent parts of carriages. The tree is too well known as the tulip tree to require any description.

Not the least important of these woods classed as second in value are the palmyra and *kitul*: both palms are valuable for building purposes, for which they are very lasting, as well as for yielding a good quality of jaggery; from this in some places a fine white sugar is made. The former of these trees grows chiefly in the Northern Province, whence a large trade is carried on to Colombo and the opposite coasts of India. The chief use of the palmyra is for rafters, that of the *kitul* for reepers. These latter are known commonly as nipera reepers, and are dearer than any other kind; they last in many instances for fifty or sixty years. The *kitul* is used, in addition to the above purposes, for handling tools, and for spears for hunting wild hogs and porcupines. It grows in various parts of the Island, though not abundantly.

The *gal-mendóra* is very good timber for beams, wall-plating joists, planking, or similar purposes, and is much used as a cheap substitute for more durable wood. It is abundant in most parts of the Island, and grows to a large size.

In addition to the above enumerated, there are some others of this class equally valuable, but by far too rare to be cited as useful woods.

In the third class there are a far greater number than of the previous descriptions. Foremost amongst them in value are the *muruta*, *godapara*, *kiri-hembiliya*, *hora*, *gona*, *ubbériya*, *hal*, and *diyapara*. These are all good for secondary house-building use under cover, and the three former well adapted for dry coopering purposes. The *diyapara* and *muruta* for casks may be ranked just before *hora*, *hal*, and *ubbériya*. They are all light in texture, and easily worked; the most abundant of them is the *hal* and *hora* wood.

These are the woods almost universally employed for coffee casks, their cheapness greatly recommending them for the purpose. The former abounds in all the forests of the maritime and Central Provinces. I am of opinion, however, that more unsuitable wood could hardly be found than this and the *hora*; indeed, unless they be remarkably well seasoned or deprived of their resinous and gummy matters by boiling, they are about the worst timber that could be used for coffee. I have seen floating on the surface of water in which these woods had been boiled a scum, an inch thick, of dark gummy matter, the liquor emitting an offensive odour. In addition to this the porous nature of the wood is an objection not to be overlooked. These are disadvantages which do not occur in other kinds of wood to nearly so great an extent.

Although being placed in the third class for reasons already assigned, the cocoanut is by far the most valuable of the trees of Ceylon to the natives, and regarded in a commercial point of view, it must be so considered by Europeans. Its use generally as a building wood is confined to the natives, who require no other with which to construct their humble dwellings. For rafters it is also used generally. The harder part of the tree is capable of being worked up for furniture and ornamental purposes, admitting of a very good polish; it will not, however, stand any long exposure to weather, and the green wood will decay in ten days or a fortnight if left exposed. There would appear to be no portion of this truly valuable tree lost to the Singhalese: every part from the root to the dried flower and the stalks of the leaves is placed to its own proper use.

In the fourth class are found all those woods which are either quite useless, save for firewood, or are only employed for the most inferior works, such as fencing gardens and for the walls of temporary mud and stick huts. They are

mostly of very rapid growth and equally rapid in decay, some of them falling to pieces within a few days of being felled.

I know of no peculiarity attaching to any of this class of woods, save to the *riṭi-gaha*, the wood of which is perfectly useless, but its bark is turned to good account by the natives of Badulla and Uva, in the forests of which districts the tree chiefly grows. The bark is very pliant and durable, and the villagers avail themselves of these qualities by stripping it from the tree in large pieces and sewing it up into bags, in which they convey coffee or paddy to market on their bullocks' backs. The *kirilla*, or corkwood, is useful on account of its softness for lining insect cases.

CATALOGUE OF CEYLON WOODS.*

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abundance.
Aaridde	...	...	3 B
Agalandere	... Malabar Nut	...	3 B
Ahu	... Broad-leaved Morinda...	Morinda sp.	4 B
Akmelle	...	...	3 C
Alebeiriye	...	...	3 B
Aleberiliye	...	...	3 C
Alerin	... Caneru	...	4 C
Alpedde	...	...	3 B
Aluboa	...	... Calyptranthes jambolana	3 B
Alukettiya	...	...	4 B
Aludel	... Dell	... Artocarpus pubescens	2 B
Ambe	... Mango	... Magnifera indica	4 C
Angene	...	...	3 C
Ankende	...	...	4 B
Anoana	... (Netted) Custard Apple	Anona squamosa	4 C
Arreloo	... Gallnut	... Terminalia chebula	2 C
Arreliye	... Oleander	...	4 C

* Reprinted exactly from the original edition of 1849.—Hon. Sec.

Sinhalese Name.	English Name.	Botanical Name.	Quality.	Abundance.
Arremene	...	...	...	2 C
Attikka	...	... Ficus sp.	...	4 C
Atoketiye	...	...	...	4 C
Autton	...	...	...	4 C
Badoella	...	...	...	4 B
Bairiye	...	...	...	4 C
Bakmie	...	...	...	3 C
Bale	...	...	...	4 C
Baludan	...	...	...	4 B
Bambere	...	...	...	2 C
Bappede	...	...	...	3 C
Baidambe	...	...	...	3 C
Battedombe	... Clove Tree	...	...	3 B
Battekeena	... Wild Keena	... Calophyllum acuminatum	...	4 B
Battekirille	... Shining-leaved Erythroxylon	...	...	3 D
Bely	... Bengal Quince	... Ægle marmelos	...	4 C
Beligobot	... Talia-leaved Hibiscus...	...	...	1 C
Beriliye	...	...	...	2 C
Bilin	... Bilimbi Tree	... Averrhoa bilimbi	...	4 C
Bongaha	... Buddha	... Ficus religiosa	...	4 C
Boakiri	...	...	...	2 C
Boambo	...	...	...	4 B
Boamea	...	...	...	4 B
Bookende	... Malacca Tree	...	...	4 C
Borre	...	...	...	3 B
Booloo	...	... Terminalia bellerica	...	4 C
Burutte	... Satinwood	... Chloroxylon Swietenia	...	1 C
Cabalmara	...	...	...	4 B
Cadol	... Leafy Mangrove	... Rhizophora Cadol	...	2 B
Cadocmberiyē	... Bastard Ebony	... Diospyros ebenaster	...	1 C
Cadoroo	... Spear-leaved Cerbera	...	...	4 A
Cahamilille	...	...	...	1 C
Cahate	... Astringent Tree	... Eleocarpus serratus	...	2 C
Cahadawata	...	...	...	3 D
Cadju	... Cashew Tree	... Anacardium occidentale	...	4 H

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abun- dant.
Calemadowa ...	—	—	... 3 C
Caletive ...	Cork-barked Quatteria...	—	... 3 C
Calooberiye ...	—	—	... 4 C
Caluhaberele ...	—	—	... 3 B
Calukeale ...	—	—	... 2 B
Calumediriye ...	Calamander	... <i>Diospyros hirsuta</i>	... 1 D
Caluverei ...	Ebony	... <i>Diospyros ebenus</i>	... 1 C
Carawoo ...	—	—	... 4 C
Carepinche ...	—	... <i>Bergera Konigii</i>	... 4 C
Carewele ...	—	—	... 4 C
Carre ...	Small-flowered Canthum	—	... 2 B
Carreboo ...	—	—	... 3 B
Catepete ...	Horny Alengeiena	—	... 2 C
Catoandere ...	—	—	... 1 D
Catoburute ...	Thorny Satinwood	—	... 1 D
Catoembool ...	Five-leaved Silk Cotton	—	... 4 B
Catokende ...	—	—	... 4 C
Catoekale ...	Knotty Thorn	—	... 2 C
Caotkittool ...	Thorny Nipéra	—	... 3 C
Catokurundu ...	Thorny Scolopia	—	... 3 B
Catoveiriye ...	—	—	... 3 C
Caumorangau ...	Carambela	... <i>Averrhoa carambola</i>	... 3 C
Cauperiburute	Caffre Satinwood	—	... 1 D
Coan ...	Ceylon Oak	—	... 3 B
Coapy ...	Coffee	... <i>Coffea arabica</i>	... 3 A
Cobbae ...	Saw-leaved Ornitrophe	<i>Ornitrophe cobbe</i>	... 2 B
Coboamelle ...	—	—	... 3 C
Cocatiye ...	—	—	... 3 B
Coembook ...	—	... <i>Pentapere paniculate</i>...	... 2 B
Cohombe ...	—	—	... 2 C
Cohukirille ...	—	—	... 4 A
Colon ...	—	—	... 3 B
Coodeludehy ...	Caffre Lemon	—	... 3 C
Cukurumaan ...	—	... <i>Randia dumetorum</i>	... 3 A
Cooretiye ...	—	—	... 2 C
Corecaha ...	—	—	... 2 C
Cos ...	Jak	... <i>Artocarpus integrifolia</i>	1 A
Cosdambe ...	—	—	... 2 B

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abundance.
Cotekimbula ...	Double-leaved Fig	...	4 B
Cottepol ...	—	...	3 C
Cottambe ...	Country Almond	... Terminalia catappa	3 B
Cukule ...	—	...	3 B
Cummelle ...	—	...	4 C
Curutiyedambe ...	—	...	3 B
Curundu ...	Cinnamon	... Cinnamomum zeylanicum	4 A
Daanga ...	Long-flowered Spathodea	—	4 B
Dadamary ...	—	...	4—
Dalook ...	Triangular Spurge	... Euphorbia antiquorum	4 C
Dambe ...	—	...	2 C
Daminne ...	—	...	3 B
Damonne ...	—	...	3 C
Dampere ...	—	...	4 D
Dan ...	—	...	4 A
Daweta ...	—	...	2 C
Dawalkurunda ...	—	...	4 B
Debere ...	—	...	3 B
Dedicaha ...	—	...	3 B
Dehy ...	Line	... Limonia sp.	3 A
Deloon ...	Pomegranate	... Punica granatum	3 C
Demete ...	—	...	4 B
Dimbool ...	Wood Apple	... Fercnia elephantum	4 B
Devicadaroo ...	—	...	4 B
Diyebeiriye ...	—	...	3 B
Diyehaberde ...	—	...	3 B
Diyeheliya ...	—	...	3 A
Diyenan ...	—	...	2 A
Diyapara ...	—	... Dillenia sp.	3 B
Diyeratembela ...	—	...	3 B
Diyetanliye ...	—	...	3 C
Dyietorene ...	—	...	2 B
Dodanpana ...	—	...	3 B
Dombe ...	Wild Jack	.. Calophyllum inophyllum	2 B
Dombekeena ...	Wild Keena	...	3 B
Dommele ...	Rosin Tree	...	3 B

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abun- dant,
Doon ...	—	...	1 B
Donemadelan...	—	...	3 C
Eapette ...	Tage-leaved Alungria	—	2 B
Eariye ...	—	...	4 B
Eheale ...	Purging Cassia	... Cassia fistula	2 B
Eheate ...	—	...	4 B
Elekeheriye ...	—	...	1 C
Elewaran ...	—	...	4 C
Elemediriye ...	—	...	2 D
Emberelle ...	—	...	3 B
Embille ...	Small-leaved Bramble...	—	3 C
Embooldeloon ..	Sour Pomegranate	...	3 D
Embooldodan...	Sour Orange	...	3 C
Emboolbakmee	—	...	4 C
Erebadoo ...	—	...	4 A
Esbedde ...	—	...	3 B
Etdemete ...	—	...	4 C
Eteheriliye ...	—	...	3 B
Ettekerean ...	—	...	3 B
Etembe ...	Wild Mango	... Mangifera indica	4 A
Etone ...	—	...	4 A
Etteiriye ...	Ash-leaved Munuya	...	1 D
Ettoare ...	—	...	4 C
Galandere ...	—	...	2 D
Galis ...	—	...	2 C
Galkerew ...	—	...	2 C
Galkulu ...	—	...	2 C
Galmendora ...	Mendora	...	2 C
Galmora ...	—	...	2 B
Gasiyembela ...	—	...	2 C
Galvereloo ...	—	...	3 C
Gammanlo ...	—	...	2 C
Gammee ..	Oleandu Cassia	...	2 A
Gandepane ...	—	...	4 B
Gedeboo ...	—	...	4 B
Geriette ...	—	...	3 B

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abundance.
Getenitol ...	—	...	2 C
Gerikuloo ...	—	...	2 C
Goanebaroo ...	—	...	3 B
Godacadooroo	Poison Nut	... Strychnos nux vomica	4 B
Godapara ...	—	... Dillenia dentata	2 A
Goketo or Kana Goraka ...	Gamboge Tree	... Hebradendron gambogioides	3 B
Gonele ...	—	...	3 B
Goolmore ...	—	...	4 B
Gonkea ...	—	...	3 C
Gonne ...	—	...	4 B
Goreka ...	Gorka Tree	... Garcinia sp.	4 A
Gotokeena ...	Large Keena or Calaba	Calophyllum calaba	3 C
Gurukeena ...	Small Keena	...	3 B
Gereika ...	—	...	3
Goorinde ...	—	...	4 C
Halpenne ...	—	...	4 B
Hakurusiyembel ...	Jaggery Tau arind	...	3 C
Hal ...	Hal	... Vateria indica	3 A
Halmendora ...	—	...	3 B
Halmilille ...	Halmilille	... Berria ammonilla	1 C
Hompalenden...	—	...	3 B
Hampinne ...	—	...	4 A
Handoonwenne	Ceylon Sandalwood	...	3 C
Hedewoke ...	—	...	2 B
Heenkebbelle...	—	...	2 A
Heennauren ...	Small Orange	...	3 C
Helenbe ...	—	...	3 B
Hick ...	—	...	3 B
Hingool ...	—	...	3 B
Hiricadol ...	—	...	2 C
Hoamdiriye ...	—	...	1 D
Hondepera ...	Large flowered Dilenia	... Dillenia sp.	4 B
Hora ...	Thief Tree	...	3 B

Sinhalese. Name.	English Name.	Botanical Name.	Quality. Abundance.
Hulanhik ...	—	—	... 1 B
Hulanmauraee ...	—	—	... 2 B
Hunukirille ...	—	—	... 4 B
Hury ...	—	—	... 2 B
Idde ...	—	—	... 3 B
Imbool ...	Stained Silk Cotton-wood	Bombax malabaricum	4 B
Indy ...	Small Date Palm	—	... 4 B
Itte ...	—	—	... 4 B
Ilookberiyē ...	—	—	... 3 C
Jamboele ...	Pumplemos or Shaddock	Citrus decumana	... 4 C
Jamboo ...	Jambo or Malay Apple	Eugenia sp.	... 2 B
Jawenauren ...	King's Orange	—	... 4 C
Jayepaule ...	Purging Croton	... Croton tiglium	... 4 B
Krabu ...	Clove	... Caryophyllus aromaticus	4
Kok ...	Crane Tree	—	... 4
Keale ...	—	—	... 2 C
Kebelle ...	Oblique Agincia	—	... 2 B
Kedepotta ...	—	—	... 3 B
Kekuna ...	Molucca Nut	... Aleurites moluccanum	4 A
Kende ...	—	—	... 3 A
Keppettiya ...	Aromatic Croton	—	... 3 A
Katekanle ...	—	—	... 2 B
Ketembelle ...	Rose-leaved Bramble	—	... 3 B
Kekelimesse ...	—	—	... 3 B
Keneheriya ...	Lobe-leaved Cestus	—	... 3 B
Kedemesse ...	—	—	... 3 C
Kintoloo ...	—	—	... 4 C
Keribeiriya ...	—	—	... 3 C
Kericoan ...	—	—	... 3 C
Kerihimideye ...	—	—	... 3 C
Kerille ...	Corkwood	... Sonneretia acida	... 4 B
Kiripolloo ...	—	—	... 2 C
Kiripelle ...	Indian Fig or Banyan	Ficus indica	... 3 C
Kiriwalla ...	—	—	... 3 B
Kittool ...	Nepera	... Caryota urens	... 2 B
Kabari ...	Blotched Wood	—	... 3

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abundance.
Keyiya	... Screw Pine	...	... 2
Lamloe	...	...	... 4 C
Lawaloo	...	...	... 4 C
Liyan	...	...	... 3 C
Liyangoo	...	...	... 3 C
Looloo	... Smooth-leaved Cordia ...	...	... 3 C
Loonumidelle	... Common-leaved Tree ...	...	... 2 C
Lowy	... Lovey-lovey	...	... 4 C
Luhankende	... Three-leaved Fagara ...	...	... 4 C
Lunubinde	...	...	... 3 C
Lunuwanene	... Sacred Grateena	...	... 4 C
Mabily	...	...	... 1
Margosa	...	... Melia azedarachta	... 3
Maapatkebelle	...	...	... 2
Madetiye	...	...	... 3
Madool	... Bog Tree	...	... 4
Madool Carende	Feast Tree	... Dalbergia sp.	... 4
Mahsdan	... Jar Plum Tree	... Calyptranthes jambo- lana	2
Malabede	...	...	... 4
Makalu	...	...	... 1
Mabburute	... Flowered Satinwood	...	... 3
Malepete	...	...	... 3
Malkeare	...	...	... 2
Marada	...	...	... 4
Marende	...	...	... 4
Masan	... Blunt-leaved Tree	...	... 4
Malavere	...	...	... 3
Mauran	...	...	... 4
Mauoessan	...	...	... 4
Madye	...	...	... 4
Mediye	...	...	... 3
Mee or Illipia	... Honey Tree	... Bassia longifolia	... 1
Meandel	... Delwood or Wild Breadfruit	... Artocarpus pubescens...	1
Meiltavere	...	...	... 3
Meanmeille	...	...	... 1

Sinhalese Name.	English Name.	Botanical Name.	Quality-Abundance.
Meepook ...	—	...	3
Meeriye ...	—	...	3
Melli ...	—	...	3
Milille ...	—	... Vitex trifolia	1
Midelle ...	—	...	4
Mille ...	—	...	1
Moalbedde ...	—	...	2
Molebeya ...	—	...	3
Moodilla ...	—	...	4
Moonemal ...	—	... Minusops elengi	2
More ...	Eyeball	... Nephelium pulpilla- tum	2
Motemole ...	—	...	3
Moodomuranga ...	—	...	4
Myle ...	—	...	2
Mugume ...	—	...	3
Murute ...	—	... Lagerstroemia regina	2
Malu ...	Bag Tree	...	3
Naa ...	Iron Wood	... Mesua ferrea	1
Nan-nam ...	Stem-flowered Tree	...	4
Nangewally ...	—	...	4
Nanhingool ...	—	...	3
Nauwa ...	—	...	4
Nawehandy ...	—	...	4
Neke ...	—	...	4
Nelly ...	—	...	2
Nendoon ...	—	... Dalbergia lanceolaria	2
Nereloo ...	—	...	3
Neten ...	—	...	4
Nuge ...	Banyan	...	4
Nomede ...	—	...	3
Ooruhonde ...	—	...	3
Oouankende ...	—	...	3
Oatoroo ...	—	...	3
Ookberriye ...	—	...	3
Oamby ...	—	...	4
Oala ...	—	...	3

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abundance.
Odidehy	... Common Lemon	...	3
Ooguresse	...	...	4
Ookoonu	...	...	3
Oorukanu	...	...	4
Oorukeena	... Wild Keena	...	3
Ote	...	...	4
Oul	...	...	3
Paloo	... Sweet-fruited Tree	...	2
Palol	...	...	4
Pamburu	...	...	3
Pando	...	...	4
Pandere	...	...	3
Pamedambe	...	...	3
Panukeren	...	...	4
Patan	...	...	3
Patechamere	...	...	3
Patengey	... Sappan	... <i>Cæsalpinia sappan</i>	1
Patkeale	...	...	3
Pattadel	... Common Dell	...	2
Pauberoo	...	...	3
Pauwatte	...	...	4
Payeroo	...	...	2
Pehimbiye	...	...	2
Petan	...	...	2
Peire	... Guava	... <i>Psidium</i> sp.	4
Peiretombele	...	...	3
Pelim	...	...	4
Penele	...	...	3
Penibaru	...	...	2
Penidodan	...	... <i>Citrus aurantium</i>	4
Pol	... Coconut	... <i>Cocos nucifera</i>	2
Polyabere	...	...	3
Poroadediya	...	...	2
Puwak	... Areka	... <i>Areca catechu</i>	3
Poroabedde	...	...	3
Poroamaureu	...	...	4
Poojate	... Sacrifice Tree	...	4

Sinhalese Name.	English Name.	Botanical Name.	Quality, Abundance.
Panawelle ...	—	—	... 4
Penile ...	—	—	... 4
Rambutam ...	Rambutam	... Nephlium lappaceum ..	3
Rameneidele ...	—	—	... 2
Ranewere ...	—	—	... 3
Ratbereliye ...	—	—	... 2
Ratedel ...	Red Keena	—	... 4
Ratekakeena ...	—	—	... 4
Ratkeale ...	—	—	... 2
Rategoreka ...	—	—	... 4
Ratecombo ...	Evergreen	—	... 3
Katejambo ...	Roseapple	—	... 4
Ratesappoo ...	—	—	... 3
Ratelowoloo ...	—	—	... 3
Ratenelle ..	—	—	... 4
Ruek ...	—	—	... 4
Ruekattene ...	—	—	... 4
Ritigaha ...	Pole Tree	—	... 4
Sal ...	—	—	... 1
Samedera ...	—	—	... 3
Sapoo ...	—	—	... 1
Sapumilile ...	—	—	... 3
Seirie ...	—	—	... 3
Sevelemediye...	—	—	... 4
Siyembela ...	Tamarind	... Tamarindus indicus ...	2
Soketel ...	Smooth-leaved Chocolate	—	... 4
Sooriye ...	Persian Wood or Tulip Tree	... Thespesia populnea ...	1
Sooriyemaura ...	—	... Mimosa	... 2
Sudoeanu ...	—	—	... 3
Sudoliyan ...	—	—	... 3
Sudokerew ...	—	—	... 3
Suvende ...	—	—	... 2
Samanele ...	—	—	... 4
Talgaha ...	Palmyra	... Borassus flabelliformis	1
Tale ...	Basin Tree	—	... 4
Talandere ...	—	—	... 2

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abundance.
Tarrene ...	—	...	3
Teakke ...	Teak	... <i>Tectona grandis</i>	4
Telemba ...	—	... <i>Bombax neplaphillum</i>	1
Telekehiriye ...	—	...	3
Tembiliya ...	—	...	3
Tibiry ...	Slime Apple	... <i>Diospyros embryopteris</i>	3
Timbool ...	—	...	4
Totile ...	—	...	4
Veere ...	—	...	1
Vereleo ...	Ceylon Olive	... <i>Eleocarpus serratus</i>	4
Velenge ...	—	...	2
Velandere ...	—	...	1
Wade ...	—	...	3
Walboambo ...	—	...	4
Waldombe ...	—	...	3
Walgonne ...	—	...	4
Waljambo ...	—	...	4
Walla ...	—	...	4
Walsappoo ...	—	...	3
Walakeena ...	—	...	2
Waneidelle ...	—	...	3
Wanemee ...	—	...	3
Wanepoloo ...	—	...	3
Wanepatoo ...	—	...	3
Wanesapoo ...	—	...	4
Waran ...	—	...	...
Wantemaditchiye ...	—	...	4
Weawarene ...	—	...	2
Wellenge ...	—	... <i>Pterospermum suberifolium</i>	2
Welcaha ...	—	...	3
Welidambo ...	—	...	3
Wielipenne ...	—	...	3
Welipiyanna ...	—	...	2
Werelle ...	—	...	3

Sinhalese Name.	English Name.	Botanical Name.	Quality. Abun- dant.
Wilendewenne	—	—	... 2
Yakehaluwa ...	—	—	... 3
Yakimbool ...	—	—	... 4
Yakedde ...	—	—	... 3
Yakbedde ...	—	—	... 4
Yakberiya ...	—	—	... 5 +

SKETCHES IN NATURAL HISTORY:
DESCRIPTION OF TWO MINUTE NEW
FRESHWATER MOLUSKS OF THE GENUS
PLANORBIS AND *BITHINIA*.

BY EDGAR L. LAYARD, ESQ., C.M.E.S.

THE minute shells here described were first detected by myself accidentally: a mass of floating weed taken off the surface of a small tank or pond, about a mile and a half from Hambantota, had been placed in a basin to be examined, to obtain specimens of the next species, and in stirring the floating particles with the hand, a dead specimen of a new *Planorbis* was found adhering to it. Every atom of the weed now underwent a close scrutiny, and the search produced seven or eight other dead examples, but none living.

Recourse was again had to the pond, but though a large quantity of weed was collected, and many dead shells found, the habitat of the living creature remained still unknown to me. Later in the year (in the month of June) I was sent to this station, Point Pedro, and during my rambles through the many lanes of this populous village I examined one of the walled tanks which are so common throughout the district; here, to my delight, plentifully scattered along the edge of the water, were the bleached shells of the *Planorbis* and the *Bithinia* of the Hambantota tank.

Fortunately the drought of several months had reduced the water so considerably as to enable me to examine the decaying vegetable matter at the bottom, and attached to the underside of leaves and sticks were found the *Planorbis*, while in similar situations, but principally on stones, the

Bithinia were detected. Many specimens were procured and taken home, and other descriptions now given of their habits and form are taken from examples which are living, and have been under my close observation for several weeks.

Planorbis Tennentii.

The largest example found measures two-eighths of an inch across the widest place. Whorles three, transparent and colourless, showing the animal within ; when examined through the microscope the substance of the shell may be perceived to be laid on in successive layers. When the molusk is alive it gives a spotted appearance to the shell ; mouth inferior.

Habitat, dead leaves upon tanks and pieces of wood, on which they feed.

The molusk is endowed with the power of swimming along the surface of the water in the manner of the *Lymna* ; occasionally they reach the surface simply by detaching themselves from the bottom, when they rise by the air they have carried down with them on some previous occasion ; but when the air is all exhausted by a long continuance below the surface, they crawl up some aquatic plant till the air is reached ; the foot is then thrown out on a plane with the water, the long tentacles which are situated far back upon the body are moved rapidly about as if seeking for some support, the hold of the plant is gradually loosed and brought to bear on the surface, and with two or three sudden jerks the little voyager is fairly afloat ; its method of progression is by suction ; the whole foot is on a level with the surface of the water, which offers sufficient resistance for it to propel itself along by alternate contraction and expansion, the edges of the foot being frequently raised above the surface.

Unlike the common *Planorbis Indicus*, which carries its shell erect, *Planorbis Tennentii* crawls with its shell almost

flat, and its mouth is so situated that in this position it can be drawn down close to the object along which the inmate is crawling. Six minute eggs, strung together and fastened to the inner edge of the whorle near the entrance, have been detected by the aid of a powerful glass.

In company with the preceding was discovered the following, which I have named *Bithinia minima*, from its diminutive size :—

Bithinia Minima.

The largest specimen found measures three-eighths of an inch in length, one-eighth in breadth ; whorles three, mouth oval, plain, close with an operculum ; colour horny, transparent, the animal when alive imparting to the shell a reticulated green appearance.

Habitat, in company with the preceding, but giving preference to stones and rocks.

These minute shells are also endowed with the power of crawling along the surface of water ; they start in a similar manner, and progress by alternate expansion and contraction. So great is the hold they retain of the surface, that I have seen one with the whole of the foot even and level with the surface, apparently immovable, and yet the heavy portion of the molusk twisting and twirling round with great velocity to dislodge a fellow swimmer who had made use of it as a resting place. The mouth of the molusk is a small slit on the underside, through which is continually passing and repassing a small stream of water, much aiding it in its movements whilst swimming, which are brisk enough.

These minute molusks appear to be infested by a singular parasitic enemy, in the shape of a small active blood-red worm, which passes up into the shell and devours the inmate ; in a similar manner the glow-worm feasts on the *Cyclostoma* of the Kandyan country.

AN OUTLINE OF THE TAMIL SYSTEM OF
NATURAL HISTORY.

BY SIMON CASIE CHITTY, ESQ., C.M.R.A.S.

(Read December 1, 1849.)

LONG before Natural History as a science had engaged attention in Europe, and Aristotle had written his *Historia Animalium*, the Tamils appear to have cultivated it to a certain extent and reduced it to a system, by naming and classing all objects in the animal, vegetable, and mineral kingdoms, as far as they were known, into different genera or families, according to the mutual affinities which are indicated by their external characters. There are, however, no works now extant amongst the Tamils which professedly treat of Natural History, but we are assured by traditions that Akattiyar, who has not undeservedly been called the Hippocrates of India, had composed numerous treatises upon it, which by the lapse of ages have perished or been forgotten. My materials for the present outline of their system of Natural History have therefore been principally drawn from the different *Nikanḍu* or dictionaries, as also from the incidental notices which occur in other works. The Tamil system of Natural History embraces a two-fold classification of animated nature,—one mythological and the other natural.

According to the mythological classification, the "Gods" form a part of the zoological circle. All organised bodies being distinguished under the two heads of movable (*charam*) and fixed (*acharam*) are again distributed into seven different genera, the names of which, and the number

of species comprised by each, are stated in the twelfth chapter of the *Sūlāmaṇi Nikāṇḍu*.

According to the natural classification, which it is curious to observe approximates in some points to that of Linnæus, all things that have life (*stvarāchi*) are divided into four classes (*tōṭṭam*), and these are again sub-divided into as many genera (*sāti*) and species (*pétam*) as they are known to comprehend.

The first class, called *Sarāyucham*, includes such as are viviparous, as man, quadrupeds, the bat, the whale, the porpoise, the dolphin, the shark, the ray, &c.

The second class, called *Aṇḍacham*, comprehends such as are oviparous, as birds, fishes, the snake, the frog, the tortoise, the crocodile, the iguana, the lizard, the chameleon, &c.

The third class, called *Suvétacham*, embraces such as are engendered by heat and damp, as worms, maggots, gnats, fleas, &c.

The fourth class, called *Utpīcham*, comprises such as are germiniparous, as trees and herbs.

It is a common saying among the Tamils that "from the ant to the elephant there are 84,000,000 species of living creatures," but this is altogether fanciful, and deserves no attention. The *Nikāṇḍu* which I have consulted scarcely exhibit the names of more than 100 species in the animal and 500 in the vegetable kingdom. It should, however, be observed that these works do not mention all the animals and vegetables known to the Tamils; and for the greater part confine themselves only to such as are noticed by the ancient poets.

The quadrupeds are distinguished as follows :—

1. *Kurīnchinila-vilāṇku*, or those that live in the hilly country, such as the lion, the tiger, the elephant, the bear, &c.

2. *Mullainila-vilaṅku*, or those that live in woodland country, such as the deer, the hare, &c.

3. *Marutanila-vilaṅku*, or those that live in corn-fields, such as the buffalo, the water-dog, &c.

4. *Pálainila-vilaṅku*, or those that live in sandy deserts, such as the wild dog.

5. *Kódiḷaḷ-vilaṅku*, or those that live upon the branches of trees, such as the monkey, the squirrel, &c.

The birds are distinguished as follows :—

1. *Kuriñchinilap paṛavai*, or those belonging to the hilly country, such as the parrot, the peacock, &c.

2. *Mullainilap paṛavai*, or those found in the woodland country, such as the wild fowl.

3. *Marutanilap paṛavai*, or those that frequent corn-fields, such as the heron, the anbil, the pelican, the swan, the water-fowl; the duck, &c.

4. *Pálainilap paṛavai*, or those peculiar to sandy deserts, such as the dove, the kite, the eagle, &c.

5. *Neytalnilap paṛavai*, or those that are located near the sea, such as the sea-eagle.

The fishes are simply divided into *Kaḍal-mīṇ*, or the sea-fish, and *A'ṭṭu-mīṇ*, or the river-fish.

With regard to the vegetable kingdom, the grasses, the esculent greens, the creepers, the edible roots, and the mosses being respectively arranged under the the heads of *Pul*, *Kirai*, *Koḍi*, *Kiḷaṅku*, and *Pási*; the trees are distinguished into *A'ṇ-maram*, or the male, *Peṇ-maram*, or the female, and *Ali-maram* or the hermaphrodite; these distinctions are not, however, as in the Linnæan system, founded upon the differences in the structure of the flowers, but upon the differences in the texture of the stems: thus, trees the inside of which is harder than the outside, as the ebony, fall under the class of male trees; those the outside of which is harder than the inside, as the palmirab, fall under the class of

females ; and trees which are spongy and have a milky sap, as the *Erythrina Indica*, fall under the class of hermaphrodites.

Independent of the foregoing distinctions, plants in general are sub-divided into four kinds, viz :—

1. *O'dati*, or those which bear fruit once and then die.
2. *Avakési*, or those bearing no fruit.
3. *Vañapati*, or those bearing fruit (apparently) without blossoms.
4. *Vañapátavam*, or those bearing fruits from blossoms.

The following is a list of the animals in the *Saráyucham* class, as known to the Tamils, and arranged according to their genera. Should it meet with the approval of the Society, I shall in my next communication follow it up with lists of the objects in the other classes.

LIST OF ANIMALS IN THE SARAYUJA CLASS.

I.—Genus, *Puli*.

1. *Vayappuli* or *Sinham*, the lion.
2. *Véykaippuli*, the royal lion.
3. *Karumpuli*, the black tiger.
4. *Sempuli*, the red tiger.
5. *Kalutaippuli*, hyæna.
6. *Sirutteippuli*, the leopard.
7. *Koḍippuli*, the tiger cat.

II.—Genus, *Púnai*.

1. *Púnai*, the domestic cat.
2. *Kāḍḍupúnai*, the wild cat.
3. *Pulukuppúnai*, the civet cat.

III.—Genus, *Yáli*.

1. *Yáli* or *Yánaiyáli*.

The name of this animal occurs in the different *Nikaṇḍus*, and is described as a lion with the proboscis of an elephant,

but it is supposed to have been either fabulous or one of the extinct species. Some think it was possibly the mammoth.

IV.—Genus, *Náy*.

1. *Náy*, the common dog.
2. *Chunankunáy*, the long-eared dog.
3. *Kodínáy*, the greyhound.
4. *Chadaináy*, the woolly dog.
5. *O'náy*, the wolf.
6. *Chennáy*, the wild dog.
7. *Maranáy*, the polecat.
8. *Nírnáy*, the otter.

V.—Genus, *Nari*.

1. *Nari*, the jackal.
2. *Kuñinari*, the fox.

VI.—Genus, *Karadi*.

1. *Karadi*, the bear.

VII.—Genus, *Yáñai*.

1. *Yáñai*, the elephant.

VIII.—Genus, *Kándámirukam*.

1. *Kándámirukam*, the rhinoceros.

IX.—Genus, *Pañri*.

1. *U'rppañri*, the domestic hog.
2. *Kádduppañri*, the wild hog.
3. *Mudpañri*, the porcupine.
4. *Kadatpañri*, the porpoise.

X.—Genus, *Kutirai*.

1. *Kutirai*, the horse.
2. *Vanakkutirai*, the wild horse.

XI.—Genus, *Kalutai*.

1. *Kalutai*, the ass.
2. *Kóvérukalutai*, the mule.

XII.—Genus, *Oḍḍakam*.

1. *Oḍḍakam*, the camel.

XIII.—Genus, *A'* or *Māḍu*.

1. *A'* or *Pasumāḍu*, the cow.
2. *Kārā* or *Erumaimāḍu*, the buffalo.

XIV.—Genus, *A'ḍu*.

1. *Velāḍu*, the long-legged goat.
2. *Pallaiāḍu*, the dwarf goat.
3. *Chemmarīāḍu*, the sheep.
4. *Kurumpāḍu*, the fleecy sheep.
5. *Varaiāḍu*, the mountain sheep.

XV.—Genus, *Māṇ*.

1. *Pullimāṇ*, the spotted deer.
 2. *Velimāṇ*, the antelope.
 3. *Puluḍḍaimāṇ*, the hog deer.
 4. *Kastúrimāṇ*, the musk deer.
 5. *Maraimāṇ* or *Marai*, the elk.
- Kavarimāṇ*, the deer of whose tail the chouri is made.

XVI.—Genus, *Muyal*.

1. *Varimuyal*, the hare.
2. *Kuḷimuyal*, the rabbit.
3. *Charukumuyal* or *Ukkulāṇ*, the mimmna.

XVII.—Genus, *Kuraṇku*.

1. *Chenḱuraṇku*, the red monkey.
2. *Karuṇkuraṇku*, the black monkey.

XVIII.—Genus, *Téyváṇku*.

1. *Ngmatéyváṇku*, the brown lemur.
2. *Karuntéyváṇku*, the black lemur.

XIX.—Genus, *Aḷuṇku*.

1. *Aḷuṇku*, the armadillo.

XX.—Genus, *Kiri*.

1. *Kiri*, the common ichneumon.
2. *Chenḱkiri*, the red-faced ichneumon.

XXI.—Genus, *Anil*.

1. *Varianil*, the common squirrel.
2. *Maravanil*, the dandulena.

XXII.—Genus, *Vauvál*.

1. *Múttiravauvál*, the common bat.
2. *Kanivauvál*, the large bat.

XXIII.—Genus, *Eli*.

1. *Eli*, the common rat.
2. *Iṛappeli*, the house rat.
3. *Káḍḍeli*, the wild rat.
4. *Káreli*, the black rat.
5. *Velleli*, the white rat.
6. *Sunḍeli*, the mouse.
7. *Mulleli*, the hedge rat.
8. *Akalán*, the mole.
9. *Peruchcháḷi*, the bandicoot.
10. *Múñchúru*, the musk rat.

XXIV.—Genus, *Churá*.

- | | |
|---------------------------|--------------------------|
| 1. <i>Oṇkitchurá</i> . | 5. <i>Maddichchurá</i> . |
| 2. <i>Kuraṇkaṇchurá</i> . | 6. <i>Valuvaṇchurá</i> . |
| 3. <i>Kompaṇchurá</i> . | 7. <i>Véláchchurá</i> . |
| 4. <i>Pátchurá</i> . | |

Different kinds of sharks.

XXV.—Genus, *Tirukkai*.

- | | |
|------------------------------|--------------------------------|
| 1. <i>A'dát tirukkai</i> . | 6. <i>Chen tirukkai</i> . |
| 2. <i>Oḍḍait tirukkai</i> . | 7. <i>Pañcháḍit tirukkai</i> . |
| 3. <i>Karun tirukkai</i> . | 8. <i>Pullit tirukkai</i> . |
| 4. <i>Kuruvit tirukkai</i> . | 9. <i>Maṇaṭ tirukkai</i> . |
| 5. <i>Kóḍḍát tirukkai</i> . | |

Different kinds of rays.

PRISON DISCIPLINE IN CEYLON.

BY A. G. GREEN, ESQ.

(Read December 1, 1849.)

ALTHOUGH this paper only relates to one prison,—the Welikada Jail,—yet inasmuch as it treats of the sole place where any systematic mode of punishment and training has been carried out, it may truly be said to combine the whole Prison Discipline of the Island.

Previous to the erection of this prison, the want of a regular and systematic mode of treating criminals had been long felt and confessed on all sides—the imprisonment and labour in those days were of a most unsatisfactory nature; nothing like security of the prisoners, or real labour at their hands was ever attained. They appear to have preferred an imprisonment which offered them better lodging, food, and clothing than they could attain in their usual mode of life, with quite as little labour, and from which they could escape, whenever it suited them so to do.

This state of things had not escaped the attention of Government, and accordingly proper representations having been made to the home authorities by the then Governor, Mr. Stewart Mackenzie, it was determined to erect a suitable prison which should be placed under new and efficient management.

In 1841, Sir Colin Campbell being then Governor, the present building was commenced by the Civil Engineer, with the artificers of his department, assisted by a number of the prisoners from the old jail. In 1843, a sufficient extent of accommodation was completed to enable the authorities to place eighty prisoners within its walls, and who

continued to assist in carrying on the remainder of the work. Within a year from this time the convicts had become such good artificers, that the Civil Engineer was enabled to dispense with hired labour, and rely upon them for the completion of the buildings.

This proved not only a great saving, but it also prevented hurtful communications from being kept up between the prisoners and their friends outside, by means of the usual hired labourers.

Not long after this it was determined to bring from Kandy about forty of the most troublesome prisoners there, in order that they might be turned to better account and reap the advantage of the new system. Amongst these convicts was the noted Puran Appu, since shot at Kandy during the late rebellion.

To keep the prisoners at continuous labour is a difficult task ; on the one hand, the natural repugnance to toil inherent in the native of the tropics has to be contended with ; on the other, the physical powers of overseers and others in charge of working parties are liable to be weakened, and their interest to flag in the same proportion as those of the workmen, in long continued monotonous tasks ; hence will naturally follow among men deficient in energy and activity, a desire to get through the day as easily as possible, and their ideas of usefulness in their vocation are bounded by the simple effort to avoid censure or dismissal ; from these and similar causes arises the necessity for strict and unceasing vigilance on the part of the prison government.

A great obstacle to the profitable employment of prisoners consists in their unwillingness to afford by their labour any benefit to Government, whom they consider as their enemy, in depriving them of their liberty. To such an extent was this feeling carried among them, that on the introduction of the system of trades instruction into the prison, only a few were found willing to avail themselves of

this advantage ; and the benefits which have subsequently accrued to the establishment from this course would never have been realised had not Government, on the urgent representation of the Civil Engineer, sanctioned the payment of a small allowance to each prisoner who should attain a certain degree of proficiency in his trade. This allowance was fixed at three farthings per diem to those actively and diligently employed *learning* a trade, and six farthings per diem to the expert, or first class workman ; any act of misconduct or breach of jail rules to entail the forfeiture of the whole. This allowance, however, only applies to labour performed under estimates sanctioned by Government.

It is a curious fact connected with the history of Prison Discipline in Ceylon that the admission of a tradesman to the jail is of very rare occurrence ; out of a hundred prisoners committed, there will not be more *than one* who has been brought up to any trade. It would seem therefore that when the natives are able to earn the ordinary wages of a mechanic they rarely resort to dishonesty.

It will be obvious that in proportion as the savings of the tradesman accumulate, so will his endeavours to prevent their forfeiture increase, hence the prison government possesses a powerful incentive to good behaviour on the part of the workmen, and cases of misconduct amongst them are of very rare occurrence.

The mode of selecting prisoners for instruction in trades is as follows:—On his admission the prisoner is first sent to work at cooly labour in the road gangs or at the cabook quarries, and there kept under a course of probation for some time, when, if his overseer is able to make a favourable report of his conduct and diligence at work, he is placed as an apprentice in one of the workshops ; a choice of trades is generally accorded to him if practicable, and the usual results of promotion to second class work, and after a time from second to first class, in most cases follow.

The tradesmen prisoners are generally well behaved. The few cases of misconduct which occur are generally punished with removal for a day or two to the outdoor gangs, which seldom fails of the desired effect. Serious or oft repeated offences are visited with final dismissal from the trades department, and consequent forfeiture of all earnings.

The duty of providing employment for the prisoners is entrusted chiefly to that department with the twofold object of completing the erection of the prison and providing for the employment of the prisoners.

Masons are chiefly employed in the erection of prison buildings, workshops, and on Government buildings within a reasonable distance of the prison.

Carpenters are similarly employed, and also in the execution of work for the Civil Engineer's department when available.

Smiths are also employed on the iron work required for the prison, and on making chains and fetters for criminals, iron work for bridges, and other public works.

Sawyers perform all works required for the public in and about Colombo, and for the cooperage in the department of the Commissariat.

Stone-cutters, besides dressing all the granite used in the erection of the prison, are constantly employed in cutting stone for bridges and other public works.

A shoemakers' shop has been opened under the superintendence of an European overseer: it has been in operation about six months, and although all those now working at it were previously ignorant of the use of a single tool, the manufacture is so far satisfactory that the prison work is beginning to be much sought after; upwards of five hundred pairs of shoes of all sizes have been made and disposed of. A cooperage is just being established which promises to be useful hereafter.

The construction of wire suspension bridges is also being attempted, which, if successful, will prove a profitable and useful branch of employment.

All painters' and glaziers' work required in the prison is performed by the prisoners themselves.

Coir-matting of excellent quality useful for doors, verandahs, and barbacles is manufactured in the prison.

All cabook stones required for prison buildings are quarried and carted by the prisoners.

All cooking, washing, and attendance on the sick is done by the prisoners.

When practicable, the trades instructors are selected from among the prisoners themselves; this is now the case with the carpenters, stone-cutters, and sawyers: the two latter learned the business in the prison.

The following statement shows the number employed at different trades, and the value of labour performed by each class.

	Masons.		Carpenters.		Smiths.		Sawyers.		Stone-cutters.		Shoe-makers.		
	No.	Value per day.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	TOTAL.
		s. d.		s. d.		s. d.		s. d.		s. d.		s. d.	
1st Class.	6	1 0	2	1 0	5	1 0	12	1 0	3	1 0	3	0 8	31
2nd Class.....	9	0 9	11	0 7½	4	0 6	12	0 9	10	0 9	5	0 6	51
Apprentices	8	0 7½	6	0 4½	4	0 4½	2	0 6	9	0 6	12	0 3½	41
Total ...	23		19		13		26		22		20		123

The hours of labour are the same as those in the public departments, viz.:—From 6 to 11 A.M.; half an hour for breakfast; from 11.30 A.M. to 3.30 P.M.

Instruction, Religious and Scholastic.

Table of religious persuasion of the inmates of the Prison.

Protestants	...	...	...	...	30
Roman Catholics	...	...	...	...	40
Muhammadians	...	...	...	...	33
Buddhists	...	...	...	...	158
Gentooes	...	...	...	...	39
Total ...					300

The different religious services conducted in the prison are : for the Tamil prisoners instruction by a duly qualified native Catechist, followed by Scripture reading, the church prayers, and a short address.

On the dismissal of the Tamil congregation, numbering usually from forty to fifty, the Siphalese service commences, conducted by a clergyman of the Church of England ; the same course of instruction is pursued as with the Tamils, and in the catechetical part a knowledge of Scriptural history is sometimes shown to an extent which would surprise many Europeans. The practice of asking questions on any part of the minister's lessons is permitted and encouraged. The Siphalese congregation numbers upwards of one hundred. The prisoners are visited generally once during the week days, and addressed on religious subjects ; those in hospital also receive attention.

Schools have been in operation in the establishment since its opening, but very few prisoners were found willing to take advantage of them ; their ideas are, that Government must reap some benefit or advantage by their being instructed, or they would not incur such expense for masters, books, &c. ; out of one hundred and seventy prisoners only seventeen for a long time attended school, and the system was about to be abandoned as hopeless. But on the suggestion of the Commission, the following regulation was sanctioned by the Governor, viz., "That every hour attentively passed in school and Divine services should be deducted from the sentences of all prisoners under

"confinement for more than three months." The effects of this regulation were speedily apparent; the number of scholars rose from seventeen to one hundred and fifty; instead of *one* teacher being sufficient for the wants of the schools *three* were found requisite, and in addition to this number it became necessary to appoint some of the more advanced pupils to be monitors over the junior classes.

The schools have continued in this satisfactory state for upwards of four years. The scholars may be thus arranged:—

	1st Class.	2nd Class.	3rd Class.	4th Class.	Total.
Tamil School, one Master ...	13	9	35	0	57
Sinhalese School, two Masters ...	48	20	18	17	103
Total ...	61	29	53	17	160

The instruction given in the schools is chiefly confined to reading, and writing on slates; a few learn a little cyphering, some few have attempted to learn the English language; in this, however, very little progress is made, nor are the prisoners encouraged in the attempt; only one man has been able hitherto to make proficiency in English, and he is "Chandrefoly," the leader of the revolutionary movement in 1842, whose sentence of death for high treason was commuted to fourteen years' hard labour in chains, and who since his imprisonment has evinced intelligence and capacity far beyond the generality of his countrymen; *he* has learned to read and speak English since he came to prison, has read the New Testament through, has learned the trade of carpenter, and by his general good conduct has won the goodwill of all with whom he is concerned.

Suitable books are provided for all who can read; a small library containing some useful works in English is provided for European and Burgher prisoners.

The numbers which have passed through the school and been taught to read well, and in about half the cases to write a little, are 95 Singhalese and 46 Tamils.

Tables having reference to the state of education generally are here subjoined.

Table No. 1 shows the number who could read, or read and write, on their admission to prison, of the present inmates of the jail :—

Could read	...	...	...	16
Could read and write	...	...	...	63
Neither	...	...	...	221
Total ...				300

Table No. 2 shows the number who could read and write in every hundred prisoners committed during the last six years :—

Out of every 100 Prisoners committed in the year.		Could Read and Write.	Out of every 100 Prisoners committed in the year.		Could Read and Write.
1844	...	26	1847	...	26
1845	...	31	1848	...	28
1846	...	22	1849	...	34

Table No. 3 shows the state of education in different districts :—

(Prisoners admitted from the several outstations and Colombo.)

Place.		Number.		Could Read and Write.
Jaffna	...	84	...	40
Galle	...	62	...	19
Colombo	...	100	...	30
Chilaw	...	58	...	14
Kandy	...	100	...	21

The hours for meals are 6 A.M., 10 A.M., and 5 P.M. The former consists only of bread, biscuits, or hoppers, and coffee; the two latter each of one-third quart of rice and a curry of either dried fish or vegetables. The food is cooked by a portion of the prisoners. Twice a week fresh fish is

substituted for salted. This scale relates only to the native prisoners; for Burghers and Europeans beef and bread are substituted for a part of the curry. The cost per diem in the former case is $3\frac{1}{2}d.$, for the latter $6\frac{1}{4}d.$

For the hospital, of course, there are various scales employed, according to the orders of the medical attendant.

The clothing for the native prisoners is of the simplest kind, consisting only of two slips of blue and white cloth, the cost of which is $9d.$, and they are expected to last fully three months. European and Burgher prisoners are allowed a straw hat, a jacket and trousers of blue calico, a shirt, and a pair of shoes, the whole costing $12s.$, or $\pounds 2. 8s.$ per annum.

The bedding for natives is simple—a common straw mat and cumblie; and for Europeans and Burghers a mattress, blanket, and pillow.

The prison hospital is under the immediate care of a medical sub-assistant, who is allowed two prisoners to act as orderlies under him. He visits the whole of the prisoners weekly, and the inmates of the hospital daily. This officer has great need of the utmost vigilance and discretion in reference to the many reported cases of sickness amongst the inmates, who, quite aware as they are of the exceptions from labour of all the hospital patients, constantly resort to every description of feigned illness to gain admission to the sick wards. The obstinacy and endurance of actual suffering on the part of some natives who prefer anything to labour, are almost past belief.

In the same manner, prisoners sometimes feign insanity to a most remarkable degree—refusing food and playing the most fantastic tricks to give probability to their case. Instances are on record in which prisoners have starved themselves to death, or brought on fatal maladies from their obstinate determination not to give way.

The punishments resorted to for offences committed within the prison are flogging, solitary confinement, and

diminished allowance of food. The former is much dreaded by the prisoners, and the remembrance of it seems never to leave them. Solitary confinement is rarely resorted to for longer than three or four days, as it has a prejudicial effect on their health.

The practice of cutting off the hair of convicts, though so very general in other countries, has not been adopted here, which is to be regretted, as it is believed that the fear of losing their most cherished ornament would operate very powerfully upon them.

The following table shows the terms for which the three hundred present inmates of the prison have been sentenced :—

Transportation.											
Life.	Ten years.		Seven years.		Five years.						
1	...	10	...	6	...	2					
Imprisonment with hard labour.											
Years.											
Life.	14.	10.	7.	5.	4.	3.	2.	1½.	1.	6.*	
1	...	3	...	4	...	44	...	24	...	111	
										...	
										30	
										...	
										8	
										...	
										16	
										...	
										37	

* Months and under.

* Months and under.

Escapes have been numerous, but not more so than might be expected when the exposed situation of the jail, the density of the surrounding jungle, and the extent of grounds over which the outdoor gangs have been employed are taken into consideration.

The number of escapes during the last six years have been as follows:—

Year.	Escaped.	Re-taken.
1844	9	9
1845	3	2
1846	2	0
1847	5	5
1848	10	8
1849 (9 months) ...	3	0
Total ...	32	24

Escapes have been chiefly made from the parties at work at a distance from the prison, and are generally effected by men who were not liable to be suspected of such an intention, although there can be no rule given for placing confidence on any prisoner as regards his not escaping; for men have escaped from the prison whose periods of imprisonment remaining were found to have been only fourteen days, thirty-six days, three months, and forty-five days respectively.

Of the general character of the prisoners the following Table of Offences will give an idea :—

Convicted of	No.	Convicted of	No.
Murder	... 3	Rape	... 3
Manslaughter	... 12	Poisoning	... 1
High treason	... 2	Forgery	... 3
Violent assault	... 15	Uttering forged in-	
Assault	... 13	strument	... 7
Assault and robbery	... 31	Arson	... 1
Burglary	... 15	Pejury	... 3
Burglary and robbery	... 26	Maliciously killing	
Highway robbery	... 20	cattle	... 2
Cattle stealing	... 35	Breach of local Or-	
Robbery	... 22	dinances	... 6
Having stolen property	19		
Theft	... 16	Total	... 300

It will be seen from the following table that the prisoners are chiefly young men, and the prison books show that the weighty offences are committed by men advanced in years, to a certain extent :—

Of 50 years of age and upwards	...	11
45 do. do.	...	13
40 do. do.	...	11
35 do. do.	...	24
30 do. do.	...	60
25 do. do.	...	111
20 do. do.	...	63
18 do. do.	...	7
Total	...	300

In calculating the progress of crime in the Island it should be borne in mind the great advances the population has made in civilisation during the last five years. It is an admitted fact, that as new tastes are acquired and fresh comforts and appliances are ushered into society by the advances of civilisation, so will a certain class of offences against the laws increase: new wants are created, new desires spring up. Better clothing, larger houses, and increased conveniences are all aimed at as the inhabitants become acquainted with the habits and usages of their more civilised neighbours. What at first were deemed luxuries gradually assume the form of necessities, and the demands for the gratification of these new cravings become impervious and irresistible, and either form effectual spurs to industry and enterprise, or where these qualities are not called into action, lead to acts of dishonesty, over-reaching, swindling, and the like, and in this way we may account for an increase in "offences against property."

The tables furnished below will show that this class of offences (against property) greatly predominates, and even in the few "offences against the person" enumerated, there has been in the majority of cases a remote bearing on the subject of "property"; as, for instance, in cases of murder and manslaughter, it will generally be found that the victim has in some way stood between the offender and the possession of property in the shape of land, money, jewels, &c., which the latter was bent on obtaining.

One of the tables exhibits a remarkable difference between the five principal districts of the Island as regards the prevalence of offences against the person. Thus it would seem that the offences of prisoners in the Colombo district have been principally against property alone, only fourteen per cent. having been convicted of offences against the person. This may in a greater measure be attributable to the greater degree of temptation thrown in the way of domestic

servants and others employed in the houses, stores, and shops of the merchants, traders, and others about Colombo, while in the Jaffna and Chilaw districts, where the inhabitants are scattered over a greater extent of country, and where European tastes and habits have not obtained such a hold upon the minds of the people, property is more secure; but quarrels, assaults, and even murder, are but too common.

Years.	Crimes against Property.	Crimes against Person.	Com- bined.	Against Local Ordi- nances.	Total.
1844	92	40	12	34	182
1845	90	38	7	28	163
1846	129	40	11	66	246
1847	199	104	54	94	451
1848	151	71	29	83	334
To September 30, 1849	150	23	25	21	219
Grand Total ...	818	320	138	326	1,529

Table of crime as prevailing in different districts :—

One hundred Prisoners from	Convicted of Offences against		Com- bined.	Total.
	Property.	Person.		
Kandy	67	22	14	100
Colombo	74	14	12	100
Chilaw and Jaffna	38	27	35	100

To those who watch the progress of the native mind, and the effects of contact with European usages, the foregoing details will, I trust, be found interesting, as the narrative of the introduction of prison discipline into this Colony. That much yet remains to be done there is no doubt: the jail as a Government institution may be said to be only in its infancy, and who can say what will yet be effected?

In future years, as opportunities offer, it would be well to watch the after-career of those released prisoners who have

been taught trades within the walls of Welikada; but at present this is not possible, and we can only hope and believe that the knowledge they have thus acquired is turned to good and profitable account, rendering them at once honest and useful members of society.

CATALOGUE OF BOOKS IN THE TAMIL
LANGUAGE, WITH NAMES OF THE AUTHORS,
THE SUBJECTS, AND DATES, AS FAR AS
THEY CAN BE ASCERTAINED.

BY SIMON CASIE CHITTY, ESQ., C.M.R.A.S.

(Read December 1, 1849.)

SECTION III.

THEOLOGY AND METAPHYSICAL PHILOSOPHY.

THE following fourteen treatises are collectively called *Saivachittánta Nūl*, and are considered to be the most authorised expositions of the theological position of the Vedas. They appear to have been written by different authors, and at different times, but none of them date earlier than the era of Mánikkavásakar, the great champion of the religion:—

1. *Tiruvuntiyár*: by Mánikkavásakar.
2. *Tirukkalittuppadiyár*.
3. *Sivañāṇapótam*.
4. *Sivañāṇachittiyár*.
5. *Irupávirupahtu*.
6. *Uṇmaiivilakkam*.
7. *Sivappipirakásam*: by Sivappipirakása Suwámi.
8. *Tiruvárudpayan*: by Uṇápati Sivácháriyar.
9. *Viñávenṇá*.
10. *Póttippahṛódai*.
11. *Koḍikkavi*.
12. *Neñchuvīdūtútu*.
13. *Uṇmainerivilakkam*.
14. *San̄katpanirákaranam*.

The following treatises illustrate the doctrines peculiar to the worshippers of Vishṇu :—

15. *Arisamaya-tīpam*.
16. *Tiruváymoli*: by the A'lwárs.
17. *Tirumoli*: by the Alwárs.
18. *Pakavaṭkitai*, translated from the Sanskrit.
19. *Pañcharattiram*, translated from the Sanskrit.
20. *Vaikánasaṇ*, translated from the Sanskrit.
21. *Irusamaya-vilakkam*.

The following treatises explain the doctrines of the six different philosophical schools of the Hindús, which were respectively founded by the Sages Kapilam, Patañchali, Kaṇátar, Viyásar, Jaimini, and Paḍḍáchári :—

22. *Avirótavuntiyár*: by Santaliṇka Suwámi.
23. *Oḷiviloḍukkam*.
24. *Vayirákkiiyatīpam*: by Santaliṇka Suwámi.
25. *Vayirákkiiyachatakam*: by Santaliṇka Suwámi.
26. *Tēvikálóttaram*.
27. *Sivatarumóttaram*.
28. *Kaivalliyanaṇantam*.
29. *Sachchitāṇantavilakkam*: by Vélaiananta Suwámi.
30. *Sittántachikámaṇi*.
31. *Sittántatīpikai*.
32. *Sivapókacháram*.
33. *Sasivarnapótam*.
34. *Sivañānatīpam*.
35. *Sivānupūtivilakkam*.
36. *Nátántavilakkam*: by Saṅkara Sivácháriyar.
37. *Nátántacháram*: by Saṅkara Sivácháriyar.
38. *A'nantattiraddu*.
39. *A'nantakhalippu*.
40. *Vétántachúḍámaṇi*.
41. *Ariuvilakkam*.
42. *Meyñāṇavilakkam*.

43. *Peruntiraddu.*
44. *Kuruntiraddu.*
45. *Tirumulamantiram.*
46. *Sivanerippirakásam.*
47. *Aññavataipparani.*
48. *Mókavataipparani.*
49. *Vidduneriyunmai.*
50. *Adukkunilaippótam.*
51. *Ariánantachittiyár.*
52. *Chorúpánantachittiyár.*
53. *Sivánantamálai.*
54. *Tirunávukkaraiyar.*
55. *Máyápiralápam.*
56. *Pirapulinhallilai*, translated from the Sanskrit by

Sivappirakása Suwámi, 1652 A.D.

57. *Tattuvarattinákaram.*
58. *Tattuvámirtam.*
59. *Nánmanimálai* : by Tattuvaráyar.
60. *Samayacháram.*
61. *Sittántakaraṇam.*
62. *Arudpirakásam.*
63. *Kalimaddal.*
64. *Meymmoli.*
66. *Tuttuvacharitai.*
67. *Virákamam.*
68. *A'ñantapótam.*
69. *Anupavacháram.*
70. *Sorupacháram.*
71. *Sauntariyalakari.*
72. *Pirapótachantirótayam*, translated from the

Sanskrit.

73. *Satpótachantirótayam*, translated from the
- Sanskrit.

74. *Upanidatam*, translated from the Sanskrit.

75. *Amirtacháram.*

76. *Avirótapótam.*
77. *Tirumantiram.*
78. *Ñānaváshiddam.*
79. *Ñāpasitti.*
80. *Paripúranasitti.*
81. *Tirukkaḍaipattu.*
82. *Paramártatarisaṇam.*
83. *Saivasamayāneri.*
84. *Anupútinilaiyam.*
85. *Uṇmainilaiyam.*
86. *Ñānasiriyāṇ.*

87. *Ñānakural*: by Auvaíyár, the celebrated female philosopher, who flourished in the ninth century of the Christian era.

88. *Ñāna-veddiyāṇ*: by Tiruvalluvar, the brother of Auvaíyár and the author of the “*Kuṛal*,” which obtained for him a seat on the bench of the Tamil poets in the University of Madura.

89. *Ñānakkummi.*
90. *Ñānamatiṇṇallāṇ.*

The following works treat of the illusory nature of all mundane existency, defend ascetic devoting, and inveigh against the dogmas of the A’kamas Purāṇas :—

91. *Siva-vákkīyam*: by Vákkīyar.
92. *Paráparakkaṇṇi*: by Táyumāṇa Suwámi.
93. *Ñānanúru*: by Akastiyar.
94. *Ñānamuppatu*: by Akastiyar.
95. *Koṇkaṇar Ñānam*: by Koṇkaṇar.

96. *Kapilar Akaval*: by Kapilar. A confutation of the claims of the Brahmins to superiority from caste. The author was the brother of Tiruvalluvar, and is said to have composed the present work in consequence of the Brahmins of Tiruvélúr, against whom he was brought up, having refused to invest him with the triple cord on his mother being a pariah woman.

97. *Akappaichchittar Pádal.*
98. *Aḷukunichchittar Pádal.*
99. *Idaikkáḍḍuchittar Pádal.*
100. *Pattirakiriyár Pulampal.*
101. *Paḍḍanattuppiḷḷaiyár Pádal.*

A collection of verses of different metres, attributed to Paḍḍanattuppiḷḷai, a wealthy merchant of Kávérippúmpaḍḍanam, who is said to have ejaculated them extempore as he wandered up and down the country after he had parted with all his worldly possessions and assumed the life of an ascetic.

The following works belong to the Tamil Catholics :—

1. *Ñánópatésam.*—A course of lectures on theology : by the Rev. Father Robert De Nobiles.

2. *A'tma Nirṇayam.*—A treatise on the origin and nature of the soul of man, in opposition to the various conflicting opinions held by the Hindu philosophers about them : by the same author.

3. *Mantira Málai.*—A choice collection of prayers for the use of the laity : by the same author.

4. *Vétiyar Oḷukkam.*—Exhortations on the nature and duties of the office of catechists, in twenty chapters : by the Rev. Father J. C. Beschi, 1727.

5. *Ñānakkaṇṇāḍi.*—Meditations for catechists : by the same author.

6. *Ñānamuyatchi.*—Exhortations on the practice of piety : by the same author.

7. *Véta Viḷakham.*—Exposition and defence of the doctrines of the Catholic Church, in eighteen chapters : by the same author.

8. *Pétakamuruttal.*—A confutation of schism : by the same author.

9. *Lútarinattiyaḷpu.*—The apocalyptic vision of the fall of a star from heaven applied to the fall of Luther from the Catholic Church : by the same author.

10. *Ñāṇa Vṇartala*.—Spiritual reflections: by the same author.

11. *Suviseshaka Virutti Urai*.—The Gospel for all the Sundays and festivals of the year, with practical reflections: by the same author.

12. *Reppremāta Tarkkam*.—Reasons for not attending the Dutch Church, written in the form of a dialogue between a Government schoolmaster and a Catholic boy: by the same author.

13. *Pusaittiyāṇam*.—Explanatory prayers at Mass: by the same author.

14. *Viyākūlap Pirasaṅkam*.—Sermons on the Passion of our Lord: by the same author.

15. *Kristiyāṇi A'layam*.

16. *A'tma Vtitiyāṇam*.

17. *Ñāṇa Appam*.—Pious instruction: by the Rev. Father Gabriel Pacheco.

18. *Aḷukaik Kuravai*.—Meditations on the griefs of the Blessed Virgin: by the same author.

19. *Sattiyajeyattan Saṅkaram*.—An Answer to the Rev. Mr. Meloh's "Triumph of the Truth": by the same author.

20. *A'ru Ilakkaṇam*.—The Six Attributes of God: by the same author.

21. *Ñāṇa Putaiyal*.—The Spiritual Treasure: by Rev. Father Sebastian Pereira.

22. *Kristu Anucharam*.—The following of Christ, from the Latin of Thomas à Kempis: by the same author.

23. *Saṅchivi*.—A vindication of the Catholic Church and its dogmas against the attacks of Heresy, in three books, comprising thirty-seven chapters: by the Rev. Father L. Du. Pui, Pondicherry, 1841.

24. *Sattiyavēta Parikshai*.—A work of the same author, tending as the last.

25. *Teyva Parikshai*.—A review and refutation of the Hindú religion.

The following works belong to the Tamil Protestants :—

1. A translation of the New Testament : by the Rev. B. Zeigenbalg, Tranquebar, 1715.

2. Another translation of the same : by the Rev. T. A. Bronsveldt and the Rev. J. J. Fybrandts, Colombo, 1759.

3. Another translation of the same : by the Rev. T. Farricius, Tranquebar, 1772.

4. Another translation of the same : by the Rev. C. T. E. Rhenius, Madras, 1823.

5. A translation of the Old Testament : by the Rev. B. Zeigenbalg and the Rev. B. Schulze, Tranquebar, 1723-1728.

6. A translation of the Apocrypha : by the Rev. B. Schulze, Tranquebar, 1726.

7. A translation of the Pentateuch into high Tamil : by the Rev. Phillippus De Melho, Colombo, 1790.

8. Arendt's True Christianity, translated from the German : by the Rev. B. Schulze, Halle, 1751.

9. The Popes' Mirror, showing the errors of Popery.

10. The Liturgy of the Reformed Church : by the Rev. Phillippus De Melho, Colombo, 1760.

11. Triumph of the Truth, a refutation of the principal errors of the Church of Rome : by the same author, Colombo, 1753.

12. The Heidelberg Catechism : translated by the Rev. S. A. Bronsveldt, Colombo, 1754.

13. Bern's Compendium of the Christian religion : Colombo, 1778.

14. Borstin's short questions on religion.

15. Da Mulliu and Drellincourt's Meditations and Prayers : translated by the Rev. J. Franciscus, Colombo, 1778.

16. Catechism for children : by the Rev. S. A. Bronsveldt, Colombo, 1753.

17. History of the Old Testament : Colombo, 1753.

18. History of the New Testament: Colombo, 1753.
 19. An abridged History of Christianity: Colombo, 1781.
 20. Spencer's Dogmatic Theology.
 21. A Dialogue between a Heathen and a Christian: Madras, 1776, 12mo.
 22. A Dialogue between an Idolator and a Christian: Tranquebar, 1790, 12mo.
 23. Dialogues inter Moslimum et Christianem de via ad salutem: Tranquebar, 1803, 8vo.
 24. The Book of Common Prayer: translated by the Rev. Christian David, Serampore, 1818.
 25. Bunyan's Pilgrim's Progress, English and Tamil: Madras, 1826, 4to.
 26. The Book of Common Prayer: translated by the Rev. Dr. Rotler, Madras, 1828.
 27. A Protestant Catechism, showing the principal errors of the Church of Rome: Vepery, 1830, 12mo.
 28. The Evidence of Christianity: by the Rev. T. C. Rhenius, Madras, 1835.
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SKETCHES IN THE NATURAL HISTORY OF CEYLON.

By EDGAR L. LAYARD, Esq., C.M.E.S.

(Read June 9, 1849.)

PART I.—MAMMALIA.

Order QUADRUMANA.

Family SIMIA.

Genus MACACUS.

1.—*M. SINICUS* (L.), *Desmarest*.

SYN.—*M. Piliatus*, Lesson; *Vandurá*, Sip.

The common black monkey of the maritime provinces; very common also in the Kandyan districts; about Trincomalee it is replaced by *Presbytes thersites*, and in the Jaffna peninsula by *P. Priamus*.

Genus PRESBYTES.

2.—*P. THERSITES*, *Elliot et Blyth* (Journal R. A. S., XVI., 1271).

This and the preceding species would seem to be peculiar to the Island, the present race being confined to the neighbourhood of Trincomalee.

3.—*P. PRIAMUS*, *Elliot et Blyth* (Journal R. A. S., XIII., 470; XVI., 732).

SYN.—*Kuranku*, Mal.; *Buji*, Port.

Confined to the Jaffna peninsula on this Island, but inhabiting also the Malabar and Coromandel coasts. They are particularly abundant about Point Pedro, feeding on the palmirah, margosa, and other fruits. The young are produced in February or March.

4.—Pr. CEPHALOPPEUS, *Zimmerman*.SYN.—*Simia dentata*, Shaw ; *S. porphyrops*, Link ;*S. pithicus*, Nestor Bennet ; *Rilavá*, Sip.

Peculiar to Ceylon, and distributed all over the Island, with the exception of the extreme north.

Family LEMURIDÆ.

Genus STENOPS.

5.—S. GRACILIS.

SYN.—*Loris gracilis*, Geoff. ; *Lemin loris*, Zimmerman ;*L. Ceylonicus*, Fisch ; *Unahapuluvá*, Sip. ;*Teyvanku*, Mal.

Very common, and generally distributed ; feeding on birds, eggs, and fruits. From its nocturnal habits it is not much noticed by Europeans, but by the natives it is much prized, being used in charms and love potions.

Family CHEIROPTERA, *Cuv.* ;VESPERTILIONIDÆ, *Gray*.

Genus PTEROPUS.

6.—P. EDULIS PERON.

SYN.—*P. Edwardii*, Geoff. ; *Vavulá*, Sip. ; *Vauvál*, Mal. ;*Mursagu*, Port.

This destructive animal is generally scattered over the whole Island, infesting fruit trees by night, and during the day hanging in clusters from some huge tree in the depths of the jungle, from whence it sallies forth on the approach of evening. The natives use them for food.

Genus CYNOPTERUS.

7.—C. MARGINATUS, *Birch*, *Hamilton*.

The small flying fox of Europeans ; abundant in the southern and midland provinces, but I have not met with it in the Jaffna peninsula.

Genus NYCTICEJUS.

8.—N. HEATHII, *Horsf.*

Abundant, and widely distributed; rises easily from the ground.

9.—N. TEMMINCKII, *Horsf.*

SYN.—*Vespertilio noctulinus* et *V. belangeri*, Geoff.

Common about Kalutara, inhabiting the old fort.

Genus KERIWULA.

10.—K. PICTA, *Gray.*

SYN.—*Vespertilio kerivoula*, Bodd.

I have only met with this species about Colombo in any abundance, and I obtained one solitary specimen at Ambagamuwa.

Genus PIPISTRELLUS.

11.—P. IRRORITUS, *Cantor.*

This small bat is abundant in the southern provinces; to the north it is replaced by the next species.

Genus HYPOSIDEROS.

12.—H. SPEORIS, *Sch.*

SYN.—*H. apicelatus* (female), Gray; *H. penicillatus* (male), Gray.

Remarkably abundant here (at Point Pedro), dwelling in caverns, of which there are several in the stony country about the villages of Alváy and Tonḍamánaru. It also clings under the roofs of houses in company with the next.

13.—H. MURINUS, *Elliot.*

This is equally abundant.

Genus MEGADERMA.

14.—M. LYRA, *Geoff.*

SYN.—*M. Carnatica*, Elliot.

Very abundant, and generally distributed; it rises easily from the ground when accidentally knocked down, and I am nearly sure I have seen it rise from a voluntary alighting.

Order CARNIVORA.

Family CANIDÆ.

Genus CANIS, L.

15.—C. AUREUS (?).

SYN.—*Sacalius Indicus*; *Nariyá*, Sin.; *Nari*, Mal.

I have never been able to obtain a specimen of our common jackal for identification; nevertheless, I believe the species to be identical with the Indian races.

Family FELIDÆ.

Genus FELIS.

16.—F. PARDUS, var. LEOPARDUS.

SYN.—*Puli* (*necjuvatus*), Mal.; *Tigir*, Port.; *Koṭiyá*, Sin.

The leopard (or tiger of Europeans here) is too well known to need any notice, save that the common appellation of tiger wrongly bestowed on it leads people in England to suppose that *F. tigris* exists here, which it really does not.

A black variety of *F. pardus* is not unfrequently met with; it is nearly accidental.

17.—FELIS VIVERRINUS.

Common about Jaffna. I am in possession of a beautiful half-breed between this species and the domestic variety.

Family VIVERRINÆ.

Genus PARADOXURUS.

18.—P. ZEYLONICUS, *Schreber*.

Peculiar to the Island, and seems to be plentiful near Puttalam. I have not seen it from other parts.

Genus VIVERRA.

19.—V. ZIBETHA, *Lin*.

SYN.—*V. Midulata*, Gray; *Návi*, Mal.

Abundant about Jaffna. The natives keep them in confinement for the sake of the musk, which they secrete

largely. The method of collecting the secretion is by placing the animal in a small cage, against the sides of which it is obliged to rub itself, thereby depositing the musk on the woodwork, whence it is carefully scraped.

Genus GENETTA.

20.—G. INDICA.

SYN.—*Maranari*, Mal. (literally "Tree-dog").

We have one, if not more, species of this genus, but I have not been able to identify them, never having procured a full grown specimen; they infest the houses in Colombo, but would seem to be quite unknown in the Jaffna peninsula.

Genus MANGUSTA.

21.—M. VITICOLLIS.

SYN.—*Herpestes viticollis*, Bennet.

Not uncommon in the interior of the Island, about Ambagamuwa and Pusselláwa, from which places I have received it.

22.—M. GRISEUS.

SYN.—*Herpestes griseus*, Sykes; *Kiri*, Mal.;

Bungoose, Port.; *Mukaṭiyá*, Sip.

Very common in the Jaffna peninsula. It appears identical with the Indian race, except that the nose and paws are much darker. There is another variety at Trincomalee which accords exactly with the Indian animal.

Genus LUTRA.

23.—L. NAIR, Cuv.

SYN.—*Diyaḃallá*, Sip. (literally "Water-dog").

Not uncommon in the Bentota river. I kept one alive for several weeks in a bath. It fed on fish and the heads and entrails of fowls; it was unfortunately neglected by the native servants, and died during my temporary absence from home. It uttered a low growl and a plaintive whine in showing anger or fear. When feeding it was very savage, and would snap furiously at anything held to it.

Family URSIDÆ.

Genus URSUS.

24.—U. (PROCHILUS) LABIATUS, *Blainville*.SYN.—*U. longirostris*, Seid.; *Valahá*, Sip.; *Karadi*, Mal.;*Usu*, Port.The common bear of Europeans; *ubique*.

Order INSECTIVORA.

Family SORIDÆ.

Genus SOREX.

25.

SYN.—*S. Indicus et S. Capensis*, Geoff.; *Miyá*, Sip.;*Munchúru*, Mal. (literally "Smelling-rat").The common shrew or musk rat; abundant everywhere.
There are probably several species yet to be determined.

Order RODENTIA.

Family MURIDÆ.

Genus MUS.

26.—M. BANDICOTA, *Bichs*.SYN.—*M. Giganteus*, Hardwick; *Miyá*, Sip.; *Akalán*,
Mal.; *Ratu*, Port. name for all.Common in the paddy fields round Kótté, doing great
damage to the crops and embankments. The natives
consider them very good eating.27.—M. INDICA, *Geoff*.SYN.—*M. kok*, Gray; *Velleli*, Mal. (literally
"White-belly rat").Not uncommon about Jaffna. The natives esteem them
great delicacies, and they are much sought after.28.—M. SETIFER, *Horsf*.Founded on a young specimen, the only one procured.
I shot it in a paddy field near Galle, and also saw another
near Mátara.

29.—M. DECAMENUS.

SYN.—*Velleli*, Mal.

The common European brown rat; introduced.

30.—M. RATTUS.

The common European black rat; introduced.

Genus GERBILLUS.

31.—G. INDICUS, *Waterhouse*.

Common throughout the low country. It does not appear to extend to the hills. It constructs its burrow just under the surface of grass land, to the great danger of horses and other animals, who frequently injure their feet or legs by stepping into them.

Family SCIURIDÆ.

Genus SCIURIES.

32.—S. TENNENTII, *Layard*.SYN.—*Dandū-léná*, Sin.

The large squirrel of the interior to which I have given the foregoing name, is found somewhat abundantly about Ambagamuwa and Pusselláwa. It differs considerably from *S. bicolor*. For full description of this and all our squirrels see Mr. Blyth's paper on the "Sciuri inhabiting Ceylon," which is compiled from specimens sent him by myself, and which are consequently not now in my possession to refer to. It is peculiar to the Island.

33.—S. MACROURUS, *Forster*. (Journal R. A. S.,
XVI., 1869.)SYN.—*Maranil*, Mal. (literally "Tree-squirrel").

Common large squirrel of our western coast. It never intrudes on the haunts of the preceding, nor is it intermingled with it in its own locality.

34.—*S. TRISTRIATUS*, *Waterhouse*. (Journal R. A. S., XVI., 1001.)

SYN.—*Léná*, Sin.; *Anil*, Mal.; *Surkachi*, Port.
for all the tribe.

The common low-country palm squirrel; identical with the Indian race.

35.—*S. BRODIEI*, *Blyth* and *Layard*.

Peculiar to the Island; common on the west coast from Point Pedro to Puttalam, replacing *S. tristriatus*, from which it is easily distinguishable by its pale colour and long pencil tuft at the extremity of the tail. This, however, is often wanting in stuffed specimens, and indeed even in live ones, the hair being but lightly attached to the skin.

36.—*S. LAYARDI*, *Blyth*.

This lovely little squirrel I procured in the jungles near Ambagamuwa. It is peculiar to the interior or hilly districts, and of a new species.

37.—*S. KELAARTI*, *Layard*.

I procured a *Sciurus* about Tangalla, which I fancy will prove a new species; and shall therefore name it after one of our members who is now taking up the study of the fauna of his native country, thus offering a bright example to his apathetic countrymen. Our Society may look forward with strong hopes to many new species being added to our indigenous fauna by his researches.

S. Kelaarti may be described as very like *S. Palmarum* of India, the head much redder, the alves of the back and belly more blended, and the animal altogether smaller. It entirely replaces all the small *Sciuri* from Tangalla and Hambantota, and I should fancy extends far on towards Trincomalee.

Genus PTEROMYS.

38.—P. ——?

I have seen a mutilated skin of a species killed in the neighbourhood of Ramboda. It requires identification, and there are probably other species.

Family HISTRIONIDÆ.

Genus HYSTRIX.

39.—H. CRISTATA.

SYN.—*Eyp-panri* and *Mud-panri*, Mal. ; *Porco di spino*, Port. ; *Kaṭu-úrā*, Sin. (literally "Thorn-pig.")

The common porcupine is unluckily very abundant, and generally distributed, doing great damage to the young cocoanut trees ; the flesh is very white, and good eating.

Family LEPORIDÆ.

Genus LEPUS.

40.—L. NIGRICOLLIS, F. Cuv.

SYN.—*L. Meloncha*, Tem. ; *Musal*, Mal. ; *Levri*, Port. ; *Hávā*, Sin.

Common throughout the Island, and very abundant in the plains of the western coast.

Order PACHYDERMATA.

Genus ELEPHAS.

41.—E. INDICUS, L.

SYN.—*Yānai*, Tam. ; *Aliyá*, Sin. ; *Alphanti*, Port.
The elephant.

Genus SUS.

42.—S. SCROFA, var. INDICUS.

SYN.—*Paṇri*, Mal. ; *Porco*, Port. ; *U'rá*, Sin.
The common wild hog.

Genus HALICORE.

43.—H. DUGONG, Cuv.

SYN.—*H. Indicus*, Owen; *Kadat-panri*, Mal. (literally “Sea-pig”); *Porco de mara*, Port.; *Múdu-úra*, Sip.

Common in the Bay of Kalpiya, feeding on the marine algæ; they are much prized by the natives for food.

Of the *Cetacea* that frequent our seas I have not had any opportunity of judging further than that occasionally we have an unpleasant visit from a carcass stranded on the Galle Buck, which would seem to be that of the common cachalot or spermaceti whale.

44.—PHYSETER MACROCEPHALUS.

Order RUMINANTIA.

Family CERVIDÆ.

Genus CERVUS.

45.—C. HIPPIAPHUS, Cuv.

SYN.—*Marai*, Mal.; *Merong*, Port.; *Góná* Sip.
The common elk.

46.—C. AXIS, L.

SYN.—*Mán*, Mal.; *Viado*, Port.; *Muná*, Sip.
The common spotted axis.

47.—C. MUNTJACK, Zimmerman.

SYN.—*Vel-muná*, Sip. (literally “Field-deer”).

The paddy-field deer. I have been assured by many sportsmen that there exists of this deer *sed non vidi*.

Genus MEMINNA.

48.—M. INDICA, Gray.

SYN.—*Moschus Meminna*, Erxl.; *Ukkulán panri*, Mal.
(literally “Cleft pig”); *Miminná*, Sip.

The mouse deer of Europeans.

Genus BOS.

49.—B. GAURUS.

Knox gives this noble animal as existing in his time. They are undoubtedly now extinct, which is much to be regretted.

50.—B. BUBALUS.

SYN.—*Kulu Mādu*, Mal.; *Mi-haraká*, Sin.
The wild buffalo.

Order EDENTATA.

Genus MANIS.

51.—M. BRACHYURA? *Erxl.*

SYN.—*Akunku*, Mal.; *Kaballéyá*, Sin.

I think our Island species is identical with the Indian race. It is not uncommon, but requires identification. I have also seen another species, which I have little doubt will prove to be the long-tailed *Manis* of authors.

The above list of mammalia has been the result of about three years' collection, principally in the Southern and Northern divisions of the Island. It is still very imperfect, and many more species and genera may be looked for from the interior.

I have trustworthy information of a true fox, and doubt not that a search would amply repay the time and trouble expended.

Such as this list is, I present it to the Society in full hopes that it may induce some one to come forward and contribute towards rendering it perfect.

PART II.

SKETCHES IN THE NATURAL HISTORY OF
CEYLON: ORNITHOLOGY.

BY EDGAR L. LAYARD, ESQ., C.M.E.S.

(Read August 25, 1849.)

CLASS—AVES.

Order SCANSORES.

Family PSITTACIDÆ.

Genus PALÆORNIS.

- 1.—P. ALEXANDRI (*Edw.*, pl. 292; *Nat. Lib.*
Psittacidæ, pl. 2).

SYN.—*Psittacus Alexandri*, L.; *P. Eupatria*, L., the female; *Psittaca Ginginiana*, Bris., the female; *P. Guineensis*, Scop. (*nec. Gem.*); *P. Sonneratii*, Gem.; *Pal. Nepalensis*, Hodg. (*Journal As. Res.*, XIX., 177). *Pannú-giravá*,* *Sin.*; *Pañchavarṇak-kīṭi*, *Mal.* (literally *pañcha* “five,” *varṇa* “coloured”); *Pappugaiha*, *Port.* (the name for all parrots); *Jongichy*, *Dutch.*

This parrot is found in large flocks about Colombo and in the jungles of the lower hills. It extends to Chilaw, where it is mingled with the smaller *P. torquatus*, and is also abundant at Galle, Mátara, and Batticaloa, the last place in particular. Its favourite food consists of the young blossoms of the cocoanut, and, where they are not procurable, of various wild nuts. The natives, who catch them in

* The Sighalese and Tamil names should be pronounced as if written with Italian vowels.

great numbers when young, report them to breed in hollow trees. They roost in large flocks in the cocoanut topes.

2.—*P. TORQUATUS* (*Daubenton's Pl. Enl.*, 551).

SYN.—*Psittaca Torquata*, Bris.; *Psittacus Alexandri*, var. B. Latham; *P. Cubicularis*, Hassel; *P. Docilis*, Viel.; *Giravá*, Sin.; *Marutan-kili*, *Tennan-kili*, Mal. (*Marutu* literally, the name of a tree in which they breed).

Particularly common in the Jaffna peninsula, and extending to Chilaw. In the harvest time they feed in vast flocks on the stubble or standing grain, leaving sentinels on watch for danger. When the grain fails them they devour the fruit of the tamarind, margosa, &c.

The eggs are pure white, and with little distinction between the two ends: they are generally three or four in number, and are laid in holes in trees with but scarcely any nest. Weight, 2 drachms and 16 grains. Incubation begins in March.

They are brought to Colombo to be tamed, and when properly taught speak well, and are much sought after by the native bird-fanciers.

3.—*P. CALTHROPÆ*, *Layard*.

Of this lovely bird I procured but one pair, and those in the month of November, 1848, at Kandy. The male was killed on the wing, the female in the act of feeding on the ground on some decayed fruits. As these specimens are in Calcutta with Mr. Blyth, the Curator of the Bengal Asiatic Society's Museum, I cannot describe them from themselves, and must therefore subjoin the description which he has published; and here I would beg to acknowledge the great obligations I am under to that gentleman for the names and identification of all the species here enumerated. Had it not been for the aid thus kindly afforded, the rough notes of the birds collected would never have seen the light.

Mr. Blyth says: "A beautiful species, the representative in the mountainous parts of Ceylon of *P. Columbooides* of the Nilgherries,* to which species it manifests the nearest affinity. Crown and back plumbeous-gray, passing to bluish on the rump, and rich dark indigo-blue on the middle tail-feathers and outer webs of the rest; tail yellow beneath and at the tips, sullied along the inner web of the rectrices above; forehead and cheeks (passing beyond the eye) broad, nuchal ring and entire under parts brilliant green; wings deeper green, paler and yellowish towards the scapularies; throat intense black and contrasting, with a tendency to form a ring round the neck. Upper mandible bright coral, with a white tip, the lower reddish. Wing $5\frac{1}{2}$ in.; tail probably of the usual length, but its medial feathers in the specimen described appear but half grown.† A female or young male is wholly green, more yellowish below, except the rump, which is brighter blue than in the adult male, and the tail is mingled green and indigo-blue; the more vivid green ring of the neck but obscurely indicated. Both mandibles dull coral, with white tips, and the wing measures $5\frac{1}{2}$ in., the tail but $4\frac{1}{2}$ in."

To the above may be added that in a fresh specimen the feet are bluish-grey, as it were powdered, and the eye of a pale chrome.

Our late President, Sir J. Emerson Tennent, had a singular living variety of this species, wholly of a bright chrome colour, the broad green nuchal ring being slightly darker in some lights. When I saw it, it had moulted several times, but had always assumed the same garb. It was caught in the neighbourhood of Adam's Peak.

* This species may yet be found here.—E.L.L.

† While going to press I have received a letter from Mr. Blyth enumerating some new birds received from Dr. Kelaart at Nuwara Eliya. He writes: "Among these is *P. Calthropæ* adult, with full-grown tail no longer than your specimen."

4.—*P. CYANOCEPHALUS* (*Edm., pl. 233*).

SYN.—*Psittacus Cyanocephalus*, E.; *P. Flavitorquis*, Shaw; *Palæornis Flavicollaris*, Frank; *Psittaca Bengalensis*, Bris.; *Psittacus Erythrocephalus*, Gume; *Batugirawá*, Sin. (literally “Brinjal colour”); *Payattan-kili* Mal. (*Payaru* is literally the name of a bean).

This elegant parrot seems generally distributed (with the exception of the Jaffna peninsula) throughout the Island. It chiefly prevails in the low wooded hills between Colombo and Kandy, feeding in small flocks of one or two families on the nut of the *dombagaha* (Sinhalese).

The adult birds are much prized among the natives; the young birds have the head of a greyish-purple, with a yellow ring round the throat. On assuming the plum colour of the adult bird, the feathers do not fall off, but change colour. From the numerous specimens procured, I am inclined to think this change takes place before the end of the first year.

Sub-Family LORINÆ.

Genus LORICULUS, *Blyth*.5.—*L. ASIATICUS*.

SYN.—*P. Asiaticus*, Latham; *P. Indicus*, Gme.;

Mal-girawá, Sin. (literally “Flower parrot”).

Very abundant in the plain extending along the whole sea coast from Puttalam (where said by Mr. Brodie to be common) to Tangalla. Plentiful also about Kandy and Ambagamuwa.

They are exceedingly fond of drinking from the toddy vessels; and in such situations are entrapped in horse-hair nooses by the native boys, who tame them. The young bird resembles its Indian representative *L. vernalis*. Not having the red heads, like as in the preceding species, the feathers themselves assume the bright red colour by age.

RAPTORES.

Tribe DIURNI.

Family FALCONIDÆ.

Genus FALCO.

6.—*F. PEREGRINUS*, L.

SYN.—*F. Barlarus*, L.; *F. Communis*, Bris.; *Rájáliyá*, Sij. (the name of the whole tribe of Raptores); *Paruntu*, Mal. (general name also); *Knykdief*, Dutch (literally "Chicken thief"); *Moitu*, Port. (general name also).

Very rare in Ceylon; one specimen only procured; this I shot in January, 1850, on the open plain near Vallai Bridge, Jaffna district, feeding on the waders which frequent the borders of the salt pans. In its maw were the remains of *H. Leschenaulti*.

Sub-Genus TINNUNCULUS, Vieillot.

7.—*T. ALAUDARIUS*.

SYN.—*Falco Alaudarius*, Brie.; *F. Tinnunculus*, Lin.; *F. Interstinctus*, McLelands.

This daring hawk is common throughout the Island on open ground dotted with low bushes. They are generally found hunting in couples, skimming low over the bushes and along the ground, and darting suddenly on their prey, which consists almost exclusively of small birds, such as larks and amadavats, which abound in such situations.

Sub-Family PERNINÆ.

Genus BAZA, Hodgson.

8.—*B. LOPHOTES*, (Pl. Col., 10).SYN.—*Falco Lophotes*, Tem.; *F. Syama*, Hodg.

Uncommon, but found occasionally in the Jaffna district in the cold season, from October to February. It is said to feed on caterpillars, but a specimen which I procured in Jaffna contained a lizard (*Calotes*) in its throat half devoured.

Sub-Family CIRCÆINÆ.

Genus HÆMATORNIS, Vigors.

9.—H. BIDO.

SYN.—*Falco Bido*, Hors.; *F. Bacha* (?), Daudin;
F. Cheela, var.

Not uncommon in various parts of the Island, having been received from Mr. Brodie at Puttalam, procured by Dr. Templeton near Colombo, and another was shot by myself in the Pasdun koralé near the hill Diyagallagolava, the habitat of the Edible-nest-building *Collocalia*, while sleeping on a low tree: a fortunate discharge of dust shot brought it to the ground, and on removing the skin a large mould shot was found embedded in the bone of the right wing: from its appearance it had evidently existed there for a long period.* The specimens procured in this country are uniformly smaller than the Indian race.

Sub-Family CIRCINÆ.

Genus CIRCUS, Lapepède.

10.—C. SWAINSONII, A. Smith (*Gould's B. E.*, pl. 34.)

SYN.—*C. Pallidus*, Sykes; *C. Albescens*, Leson.

Not uncommon on the open plains about Puttalam and the neighbourhood of the salt lake at Vallai, Jaffna district. It preys on frogs, lizards, and reptiles of all kinds.

* For the benefit of any person collecting in this region, into whose hands these "Sketches" may fall, the following description of a collecting gun, which I have in constant use, is given:—

Length of barrel, 3 ft. 7 in.; calibre rather less than 3-8ths of an in., carrying a ball 120 to the pound; thickness of metal 1-8th of an in., making a total of 5-8ths of an in. in the diameter of the barrel at the muzzle. At the breech the metal is much thicker, to counter-balance the length. The stock is fitted with a trap box holding wadding, balls, caps, a knife, needles and thread, &c. The charge for this gun is about a quarter the usual quantity, which will be found very economical in a country where all the collector's ammunition has to be carried by coolies. It kills at a long distance, and throws ball or three buck shot admirably, if required for deer, pea-fowl, or wild ducks. It was with this gun I killed *H. Bido*.

11.—*C. CINERASCENS* (*Gould's B. E.*, pl. 35).SYN.—*F. Cinerascens*, Montague; *C. Montagui*, Vieillot.

Abundant in the same localities as the preceding, and often mistaken for it in its adult plumage. When young it is rufous brown, with a light chocolate nuchal ring and a conspicuous whitish mark on the rump, by which it may be identified during its flight at a great distance. Its principal food consists of snakes, upon which it pounces in its low skimming flight. The prey is always seized with the foot near the neck, and instantly bitten across the head. I have seen it strike its quarry as often in the water as on land.

12.—*C. MELANOLEUCUS*.SYN.—*Falco Melanoleucus*, Pennant.

One specimen only of this bird has fallen under my notice. I shot it near Mántódđam, west coast.

Sub-Family ACCIPITRINÆ.

Genus MICRONISUS, *G. R. Gray*.13.—*M. BADIUS* (*Rl. Col.*, 308, 336).SYN.—*Falco Badius*, Gmelin; *F. Brownii*, Shaw.

This is the common sparrow-hawk of the European residents, and is most universally distributed, and very common. It preys on small reptiles and birds.

Genus ASTUR, *Bechstein*.14.—*A. TRIVIRGATUS* (*Pl. Col.*, 303).SYN.—*Falco Trivirgatus*, Rein.; *Astur Indicus*, Hodg.; *A. cristatus*, *G. R. Gray*.

Apparently confined to the mountainous districts, where, to the loss and annoyance of the planting community, it is very common, doing great damage in the hen roosts. It is very sly, and rarely falls by the planter's gun, although always killed when opportunity offers. The late Mr. Dewar

of Carolina estate, Ambagamuwa, told me many pairs built in the clefts of a perpendicular cliff overlooking the falls of the Kelani-ganga.

Sub-Family THRASÆTINÆ.

Genus SPIZÆTUS, Vieillot.

15.—S. LIMNÆTUS (*Pl. Col.*, 127, 134).

SYN.—*Falco Caligatus*, Raffles; *F. Niveus*, Tem.; *Kōlik-kallān*, Mal. (literally "Fowl thief").

The crested variety of this noble hawk is rather abundant and generally distributed. I have shot it at Mátara about the banks of the river, and at Point Pedro, the northernmost point of the Island.

Sub-Family HALLÆTINÆ.

Genus BLAGRUS, Blyth.

16.—B. LEUCOGASTER.

SYN.—*F. Dimidiatus*, Raffles; *Ichthyætus Cultrunguis*, Blyth. (*Journal A. S.*, XI.) *Kadal-A'lá*, Mal. (literally "Sea eagle").

Not uncommon, but local, one pair frequenting the same place for several years and breeding on the same tree, generally an aged *bó*-tree, whose sanctity protects the nest from the depredations of the boys. I found the nest of one pair lately (January, 1850) in such a situation; and although I offered a good reward to some lads on the spot, not one would mount to rob it, saying that the demon of the tree would injure them.

This is the largest bird of prey now existing in the Island.*

* Bennet, in his work on Ceylon, includes *Gyps Indicus* among the birds of the Island. Traditional reports are also current among the natives in the extreme south, of the existence of a large bird of prey once existing in that locality.

Genus *HALIASTUR*, Selby.17.—*H. INDUS*.

SYN.—*Falco Indus*, Boddaert; *F. Pondicerianus*, Gme.; *Milvus Rotundicaudatus*, Hodg. (young); *Chem Paruntu* Mal. (literally "Red hawk"); *Brimalgu Moitu*, Port. (literally "Red hawk").

The common red-fish hawk of Europeans is found abundantly all round the sea coast, and particularly at the mouths of rivers, where it preys upon all kinds of carrion brought down by the stream, fighting with the crows for the prize. They will sit for hours on the fish-kraals in the rivers and catch the small fish which rise to the surface in their endeavours to escape. I have known them seize a fowl, but this is of rare occurrence; one was cut down with a table knife by a gentleman while in the act of killing a large hen. They build in trees in the neighbourhood of water, making many false nests before they finally fix on a place which pleases them. While the female is incubating the male occupies one of these nests. The nest, like that of *Blagrus Leucogaster*, is composed of sticks and twigs without any lining; eggs about 2 in. in length by $1\frac{1}{2}$ in. in diameter. Colour, dull dirty white, dotted at the thick end with bloody coloured unequal and uncertain small blotches and spots; in some instances these spots are nearly black, resembling dry blood. The young, of which there are generally two, are excluded about the first week in February, incubation lasting about three weeks. Before the appearance of their feathers they are covered with a grayish down, and are apparently fed with soft reptiles.

Genus *MILVUS*, Cuvier.18.—*M. ATER*.

SYN.—*F. Ater*, Emen.; *M. Govinda*, Sykes; *Karum Paruntu*, Mal. (literally "Black hawk").

Common all along the sea coast, and easily distinguished by its deeply forked tail. It feeds in company with the last on the same substances.

NOCTURNI.

Family STRIGIDÆ.

Genus SCOPS, *Savingy*.19.—S. LEMPIGI (*Pl. Col.*, 99).

SYN.—*Strix Lempigi*, Hors.; *Scops Javanicus*, Less.; *Punchy bassa*, Sin. (literally "Small owl," the name *bassa* being common to all the owls, and even including the *Caprimulgidæ*); *Nattu*, Mal.; *Koorooi*, Port.

The Ceylon variety of this bird (the *S. Lempigi*, Jerdon) is common throughout the maritime districts, though periodical in its appearance. During moonlight nights they hunt in pairs for *Coleoptera* and *Phalænæ* about umbrageous trees, uttering their monotonous and melancholy "*wagh wagh*" when at rest, and a quick tremulous cry when flying. The natives say they build in hollow trees, never in buildings.

Genus KETUPA, *Less*.

20.—K. CEYLONENSIS.

SYN.—*S. Leschenaulti*, Tem.; *Loku Bassa* and *Bakamúná*, Sin.; *U'mattay-kúkai*, Mal.; *Bacamuna*, Port.

These large owls are common and apparently widely distributed, being found in Colombo, Puttalam, and Jaffna. The natives tell me they feed much on fish, which they catch by moonlight. A pair I kept alive for some time fed on fish with avidity. When alarmed they uttered a hissing note, ending in a deep growl, bulging out the throat. The natives report that they build in hollow trees and clefts of rocks, laying two large white eggs.

Sub-Family ATHENINÆ.

Genus NINOX, *Hodgson*.21.—N. SCUTULATUS (*Pl. Col.*, 289).

SYN.—*Strix Scutulata*, Raffles; *S. Hirsuta*, Tem.; *N. Nialensis*, Hodgson.

Found but rarely in the interior of the Island. I know nothing of its habits, never having seen it alive.

Genus *ATHENE*, *Boie*.22.—*A. CASTANOTUS*, *Blyth*.

SYN.—*A. Castanoptera*, Blyth (Journal A. S., XV., 280).

Peculiar to the Island, and discovered by Dr. Templeton in 1846. It is pretty generally distributed about the interior, and not uncommon.

Its description is fully given *loc. cit.*, and may be briefly summed up thus: Length, 7 to 8 in.; head and breast dark brown, barred with dusky buff; back and wings dark brown, barred like the head with a dark brown; tail similarly barred, but with wider stripes; vent and stomach whitish, and much mottled with brown; beak much hidden by the *vibrissæ*; feet small, and clothed with stiff hairs.

Sub-Family SYRNIINÆ.

Genus *SYRNIUM*, *Savigny*.23.—*S. INDRANI* (*Gray's Il. Gen. Birds*).

SYN.—*Strix Indrani*, Sykes, T. A.; *Ulamá*, Sin.

Found occasionally in the densest and most lonely jungles. This is the dreaded “Devil bird” of the Sinhalese, and its note is considered as a pure prestige of evil.

Sub-Family STRIGINÆ.

Genus *STRIX*, *L.*24.—*S. FLAMMEA*, *L.*

SYN.—*S. Javanica*, Sykes.

The white or barn owl of Europe is probably identical with the species which we have in this Island. The only place whence I have procured it is the old Fort of Jaffna, where the dilapidated ruins and the vast old banian tree on the bastion overlooking the esplanade afford it a congenial home; here it may be nightly heard uttering its mournful cry while seated on a gable of the old Dutch church.

NOTES ON THE GEOLOGY OF CEYLON.
LATERITE FORMATION.—FLUVIATILE DEPOSIT
OF NUWARA ELIYA.

BY E. F. KELAART, M.D., F.L.S., F.G.S.

Assistant Surgeon to the Forces.

"Even those who run may read in the Book of Nature, and if they read there is no reason why they should not note for the benefit of those who have not the opportunity of studying from the same pages."—NEWBOLD.

THOUGH the geological formations of Ceylon are of a simple nature, and described as such by writers, that attention has not been paid to the laterite formation of the Island which it deserves: some have called it decayed clay ironstone; others have described it to be granitic rocks weathered *in situ*. It has not, however, been so slightly regarded by Indian geologists. Their more recent researches have discovered new features in this peculiar formation, which have thrown great doubts as to its being the mere result of disintegrated or decomposed hypogene or trapean rocks *in situ*. Captain Newbold of the Madras Engineers has even gone so far as to suspect it to be of tertiary origin. It is with a view of drawing the attention of observers in this Island, for a more complete elucidation of this subject, that this communication is submitted to the Ceylon Asiatic Society.

The term laterite (derived from *later*, a brick) is applied to those masses of reddish clay, more or less indurated, and containing pebbles or crystals of quartz. It is called by the Sinhalese *cabook*, and is used extensively for building purposes. There are several varieties of laterite, and which admit of classification:—(1) Laterite, properly so called, of a hard compact, almost jaspedous rock, formed of indurated

clay, tabular or sinuous, in which are impacted quartz crystals of various sizes and colours, generally of a reddish or brick colour. To this kind the term *quartzose* may be applied, as it contains a larger proportion of undecomposed quartz. The cavities and sinuosities are lined, or sometimes filled with a whitish, yellowish, or reddish clay.

(2) A second variety of laterite, and that most frequently met with in Ceylon, is of a softer consistence, and can be cut easily with a knife, but hardens on exposure to the atmosphere. The term *lithomargic* laterite has been applied to this kind.

(3) There is another form which my friend Staff Surgeon Dr. Clark calls *detrital*. This is found in nullahs or ravines. It is evidently formed of pebbles of quartz loosely imbedded in clay, both being washed down to these nullahs by the heavy rains. The detritus of laterite is seen about Colombo forming a bræccia with marine shells. A laterite gravel is also seen in various parts of the Island covering the laterite hills, and it is also found at their base. This gravel is nothing more than the quartz crystals of the laterite rocks separated by the rains from their clayey matrix: some of the pebbles are denuded entirely of the clayey covering, others retain still a thin coating of it. *Lithomarge* is a sectile clayey substance of variegated colours. It is chiefly formed of a decomposed felspar and hornblende,—whitish when the former prevails, and yellow or reddish when hornblende predominates in the rock from which it is derived, owing to the larger proportion of oxide of iron which the latter mineral contains. There are extensive hills of lithomarge in Ceylon, and frequently it lies under the hard laterite, and is often interposed between its layers.

With the exception of Voysey and his few supporters (who regard the laterite to be of igneous or volcanic origin), geologists consider laterite to be the product of the disintegration and decomposition of granitic rocks. The

difference of opinion rests upon the question whether the disintegration or decomposition took place *in situ*, or whether the disintegrated masses were deposited or brought from a distance and laid over the rocks on which laterite now lies; or, in other words, is it a formation in itself derived from rocks which formerly existed?

To the former view (weathering *in situ*) there are many more supporters than to the latter; and among them our late much lamented Dr. Gardner, who from observations both in this Island and on the Continent of India, attributed the formation of laterite to the simple decay of gneiss or granitic rocks. I cannot but agree with him that in many cuts or sections of the rock nature is detected in the act of disintegration, some of the original stratification (often seen running almost vertically) of the gneiss being preserved; in other places it is difficult to trace where the gneiss terminates and the laterite commences, one as it were running into the other. But I must observe that I could never trace this continuity in the hills of the harder variety of laterite. Here, certainly, the appearances are favourable to the opinion that laterite is a distinct formation of itself. And yet this hard laterite rests on gneissic rocks, as is seen at the bottom of wells sunk in the lateritic hills at Mutwal and in the Fort of Colombo. Laterite may also be seen, says Captain Newbold, capping hypogene or trap rocks of great elevations, while the adjacent hills, composed of an exactly similar rock and forming a continuation of the same bed equally exposed to the action of the weather, are quite bare of the laterite. He also observed laterite resting on limestone without a trace of lime in the laterite. If my information is correct, laterite is also seen over some of the limestones of Jaffna in the north of the Island. General Cullen found on the western coast of India, 15 miles south of Quilon, a layer of lignite in the

laterite, imbedded in a stratum of dark shale and clays. Lignite has also been seen in the laterite of Travancore, and graphite has also been observed there. These are the observations which have made Captain Newbold and others view the laterite of Southern India as a distinct formation, more recent than any of the hypogene rocks. Till similar features are observed in some of the laterites of Ceylon, we are obliged to regard them to be the weathering of hypogene rocks *in situ*.

To comprehend how a hard compact rock like granite or gneiss could moulder away into laterite and lithomarge, it is necessary to know the composition of the minerals which enter into the formation of these hypogene rocks.

The following are the mineral constituents of the most common forms of :—

	Felspar.	Mica.	Hornblende.
Silica	... 66·75	... 48·00	... 42·00
Alumina	... 17·50	... 34·25	... 12·00
Lime	... 1·05	—	... 11·00
Potash	... 12·00	... 8·75	... a trace.
Magnesia	... —	—	... 2·25
Oxide of Iron	... ·75	... ·50	... ·25
Oxide of Manganese	... —	... ·50	... ·25
Water	... —	—	... ·75
	<hr/> 98·25	<hr/> 96·00	<hr/> 98·25

Quartz consists of nearly pure silica, with a trace, however, of alumina and sometimes of iron.—From *Jameison's Journal*.

It is easily seen that the chief source of the alumina necessary for the formation of clay is derived from the felspar and mica which enter into the composition of granitic rocks, and that hornblende supplies the largest quantity of iron, the hyperoxidation of which, assisted probably by electric influences, precedes the disintegration of these rocks. In rocks in which felspar and hornblende predominate, the clay formed is much variegated. Pure felspar forms the porcelain clay or kaolin so abundant on the plains of

Nuwara Eliya. Quartz, if deeply impregnated with oxide of iron, will also moulder away, but not quite so soon as the other mineral constituents of hypogene rocks.

Before I had observed the immense lithomargic hills of Uva and Nuwara Eliya, it was difficult for me to believe that large mountain masses of hard rock could disintegrate so completely into lithomarge. When there are, however, such unequivocal proofs of rocks, several hundred feet high, mouldering away into kaolin or white procelain clay in some parts, and in others into lithomargic earths and clays of various colours and consistence, it is not difficult to account even for the formation of the harder forms of laterite. In sections made in Nuwara Eliya for the construction of roads, successive layers of sienitic gneiss are seen in various stages of decomposition, and these layers retain in some parts, where the decay is not far advanced, the original lines of stratification. Some of these layers are of pure kaolin, others of a reddish or yellowish clay; some mixed of all three, giving a beautiful variegated surface to these exposed parts of the hills. In half-decomposed portions of some of the hills on the plains of Nuwara Eliya may be seen dark reddish spots, which are formed of decomposed garnets, and in other hills are seen scaly graphite. Adularia and ceylonite are sometimes found in the beds of clay. If such then be the striking illustration of the decomposition of one form of gneiss in which hornblende and felspar prevail, it is easy to conceive other forms of granitic or gneissic rocks weathering into laterite in other circumstances and other situations. Laterite in any shape is not found in Nuwara Eliya. The stones used here for building are half-decomposed gneiss obtained from lithomargic hills, and it is yet to be ascertained how long these will last. I fear that the decomposed stone is too felspathic to last many years.

The presence of lignite in some of the laterites of Southern

India, and sometimes laterite being found over limestone, would lead us to suppose that laterites are of two periods: the one, and only one perhaps, existing in Ceylon being of the weathering of rocks *in situ*, and therefore still being formed, and the other a deposit of disintegrated lateritic matter (over more recent formations) derived from previously existing lateritic rocks. The subject, however, requires further investigation; it is involved in greater mystery than many other geological phenomena. Ceylon affords many opportunities for carrying on observations necessary for its complete solution. The features of the laterite of Southern India, which induced Captain Newbold to suppose laterite to be a distinct formation, may also exist in Ceylon; therefore Members of the Asiatic Society will do well to note the nature of the rocks on which the Ceylon laterite lies, and to examine whether any of it contains lignite or is in the slightest degree fossiliferous. The discovery of fossils alone will not prove that laterite is not decomposed gneiss *in situ*, for Sir Charles Lyell and others have suggested the possibility of finding fossils even in gneiss of later origin. Granting that this is the case, nothing could then be easier than to account for the presence of fossils in decomposed masses of the same kind of rocks. This subject is now engaging the attention of the Geological Society of London, their notice being attracted to it by the so-called *foot-prints* on the gneissic rock at Kurunégala, which I have not yet had an opportunity of examining.*

Though the geological features of Ceylon resemble those of Southern India, yet from the paucity of observations perhaps, there appears to be considerable difference in many respects, especially in the nature of more recent deposits. Kunker, a limestone gravel, has not been noticed in Ceylon,

* Since this Paper was written I have examined the rock and found it to be laminated granite, and the marks merely the effects of weathering.

nor has clay-slate been seen in this Island, though its associate rocks are found in great abundance. Both are found in extensive beds in Southern India. Regur, the black cotton soil which covers nearly two-thirds of Southern India, has not been noticed in Ceylon, and yet it is most probable that all these three formations exist in some parts of the Island, most likely in the northern districts.

The only alluvial, or rather fluviatile, deposit in Ceylon resembling in external characters the regur of India, is the black soil of Nuwara Eliya and its neighbourhood; with this difference, however,—regur lies over a limestone gravel and the blackish loam of Nuwara Eliya over a quartz gravel with a substratum of clayey earths, formed of the lithomargic hills and valleys over which the loam and gravel were deposited. A deposit of gravel and loam has also been observed on the Nilgiris, 6,000 ft. above sea-level. These deposits of loam and gravel on the patanas and plains of Nuwara Eliya are considered by casual observers to be the decayed particles of the rocks in the immediate vicinity, brought down by the rains. If this is their real nature, the decomposed particles of the gneiss and quartzite, which chiefly compose these existing rocks above the plains, could not by any means have taken their present position of the loam and gravel. The colour, too, of the decomposed particles would not be dark brown or black, but whitish or yellowish. The loam and gravel lie so conformably on the lithomargic surface of the hills and valleys that it is unreasonable to suppose that they were deposited from any other source than from a large sheet of water.* The heavier

* May not this account for the want of luxuriant vegetation on these patanas, the water having washed and carried away to the lower parts of the Island the alkalies and phosphates so necessary to plants? The black soil of Nuwara Eliya, however rich in appearances, requires much manuring; the best potatoes are the product of well-manured grounds; guano is as much required here as anywhere else.

particles in the form of gravel sinking first, and then the lighter particles held in suspension in the water, were deposited over the bed of gravel, or, as in some places seen, on layers of various-sized pieces of quartzite and gneiss. The loam is not mixed with gravel; it is composed of fine sand, just such as the mud of rivers or lakes is composed of. In the lower layers this loam is of a brown colour, but becoming darker as it approaches the surface, and after being mixed with the decomposed matter of the grasses which grow on it, the loam becomes nearly of a peaty nature and of a blackish colour.

In sections along the different roads which traverse the plains, a continuous layer of gravel, from 1 in. to 2 ft. or 3 ft. in thickness, is seen lying over the lithomargic hills, and on this gravelly surface the brown or blackish loam is seen of varied thickness, generally from 1 ft. to 3 ft.; in some places even 5 ft. or 6 ft. of loam is found. In a section near the Governor's Cottage an interruption appears to have taken place, after about a foot of mud was deposited; then came over the pure mud masses of gneiss and pebbles, now lying several feet thick, mixed with loam of a brownish colour. Over this mixed deposit is again seen a thin layer of loam such as is found in other parts of the plain,—the whole forming a curious variegated structure.

The above observations lead me to conclude that the plains of Nuwara Eliya, and perhaps those of higher parts, have once been the channel of a slow winding river or bed of an extensive lake. And it is probable that lower hills, which look like inverted tea cups, were elevated by subsequent upheavals after the waters had deposited the gravel and loam. It is perhaps in this manner only that the almost uniform thickness of the gravel and loam in the valleys and on the tops of the hills can be accounted for. Had the present elevated surface existed while the waters were

depositing the heavier particles held in suspension, we should expect to find thicker layers of gravel on the valleys than on the sides of hills. Such is not, however, the case: thick beds of gravel are even found on the tops of the hills several hundred feet above the present drainage of the plains. Geologists have decided that the mountains of Southern India were elevated to their present heights by successive upheavals, and therefore it is not objectionable to consider the higher lands of Ceylon to have also been elevated by more than one upheaval. There is abundant evidence too, besides the one just alluded to, to conclude that Ceylon has been subjected to successive internal forces, which will explain also the present configuration of the mountain masses of Nuwara Eliya and the characters of Nuwara Eliya and Horton plains.

Hitherto no evidences of deluvial or glacial currents have been found in Ceylon. The rounded blocks of granite and gneiss seen on various parts of the Island are the effects of a spontaneous concentric exfoliation which small and large masses of these rocks are susceptible of. Major Lushington has instanced this peculiar exfoliation in a gigantic scale on the rock of Dambulla. Alluvial and fluvatile deposits are seen in various parts of the Island, but none perhaps so extensive as the fluvatile deposits of Nuwara Eliya, which appear to extend from Horton Plains, passing over Nuwara Eliya and progressing towards the valleys of Maturata on one side and to Dimbula on the other. Although these deposits are not of a diluvial nature, still there is an importance attached to them, as they show that at a former epoch the interior of Ceylon was traversed by broader and more expansive sheets of water than any of the rivers of the present day. It is doubtful, however, whether this large lake or river which has deposited its mud on the plains of Nuwara Eliya is dwindled down

into the narrow streams which now exist on these plains as tributaries to the great Mahāwēl-gaṅga.

While geology fails to tell us how a world was made, this science teaches us how after it was made it was disturbed and altered for the habitation of successive generations of organised beings. Though the ground we walk upon and the hills which surround us are inanimate objects, we ought to remember that they too received and obeyed, and continue to receive and to obey, the laws of the same Creator, who made the grass to grow and animated the world with living beings. When we observe hard adamantine rocks mouldering away into soft clays and earths by the same forces which give life and energy to animal and vegetable natures, we also find that it is one and the same power which reduces both organic and inorganic matters, at later periods, to their primitive elements. To man is given the faculty of observing and recording the operations of this power, though from him is hidden the mysterious nature of that power which was from the beginning, still is, and will at last dissolve the great globe itself. Before the tender herb and scented flowers burst into life and beauty the inorganic world received the care of the Omnipotent God; and surely what required and received His first attention is deserving of much more than our least. Therefore it is to be hoped that Members of the Asiatic Society of Ceylon, and their friends in different parts of this Island, will make such observation as will contribute to a more perfect knowledge of the Physical History of Ceylon.

ON THE MANUFACTURE OF SUGAR FROM THE JUICE OF THE COCOANUT TREE.

BY J. G. TAYLOR, ESQ.

(*Read February 23, 1850.*)

IN 1847, during my residence in the Southern Province, near the main road from Point de Galle to Má tara, this idea was first made known to me by a very ingenious person, now a resident in Galle ; but I was too incessantly engaged in the duties of my situation to allow of my making any experiments. Nor had I then the requisite experience in the ways of the Island ; besides, unfortunately, the native population had conceived so many prejudices against us and our sugar-making operations, that I think it would have been out of the question.

In the beginning of the month of September my attention was again aroused by the experiments of a friend, well versed in chemistry, on the products of the cocoanut tree, and, having procured a small quantity of sweet toddy, I had the satisfaction of perceiving that a very fair quality of sugar could be made therefrom. After this, my brother consented to tap two young trees near his residence, on small quantities of juice collected from which I made a great number of experiments, the results of which I now propose to lay before you ; and I am even sanguine enough to hope that some of them (as well as the inferences deducible from other remarks) may be of some service also to the manufacturer of sugar from the juice of the cane. In fact, we find that very often more light has been thrown on certain investigations from observations on analogous inquiries than from direct experiment on the very subject itself.

Two methods are, as described by my brother, employed by the natives to preserve the juice from fermentation by separating the feculencies. As to the nature of these feculencies, we are still, unfortunately, very much in the dark. We have, even did we possess time and ability, no apparatus or materials for the investigation of the subject, and it is for that reason I earnestly entreat the Society, should they agree with me in considering the subject to merit sufficient importance, to cause all possible efforts to be made to have these particulars thoroughly and scientifically elucidated. But I will communicate what I know on the point, as that will be some guide perhaps as to what direction the attention of the investigator should be addressed.

From the end of the spadix, a slimy matter is observable, oozing out with air bubbles along with the juice, and whether with bark or lime, but more especially with lime, an abundant bulky mass of this substance, called in Tamil *mundi*, is generally found on straining the juice; but curious to say, when the spadix is reduced to a mere stump, and the running of the toddy draws near an end, very little indeed, if any of this *mundi* is seen. I imagine from this that the *mundi* goes, in the economy of the plant, to form the flowers, &c., but may not be needed by it when the fruit is established; but this is a mere suggestion. It is not the substance which is all precipitated by the defecating agents employed, for they are equally necessary when we see none of it, and it also exists in the drinking toddy, which has had nothing put into it. This *mundi*, then, is a white, opaque, pasty substance, quite tasteless and devoid of smell, and when washed and dried contracts, and becomes first elastic and india-rubber-like, and next hard, and of somewhat the appearance of gum, but when again put into cold water swells, and becomes as at

first. It possesses one very curious property, however, which may possibly give a clue to a discovery of one at least of its constituent parts. When added to starch paste, heated till the pellicles burst, it will liquify the same, and, in one instance only, saccharified it. The latter only happened with one parcel of *mundi*, which I suppose had been kept just long enough to allow of the particular principle which effects this being evolved in proper proportion. But the liquifaction took place in more than four trials; one on the scale of three gallons of water, kept three hours on a water-bath at 150° , with about two ounces of *mundi* stirred in. Probably this may suggest that a portion of that strange substance, diastase, is present in the *mundi*, as the nature of the scum or pellicle which rose to the surface from time to time seemed to look like caseine. The dried *mundi* thrown on a red-hot iron gives out the smell of toasted bread. This may indicate dextrine, and as starch itself exists, it is said, in the sap of all plants, that may be also present. A small quantity of *mundi* which I had put aside and forgotten for a time became quite saccharine by itself. Diastase is extracted from malt, which is formed by the germination of a grain; then why not in the bursting of a flower bud? It is the diastase, acting on the starch in the grain, which saccharifies malt. I trust some able chemist may take up the investigation, a most interesting one, even as regards the solution of some of the mystery of the physiology of plants, and of the elaboration of their proteine compounds, as they are justly named.

Whatever they are—and it is all-important for us that they should be known exactly—they seem to exercise under favourable circumstances no evil influence that we can see, on the liquor which reaches the hands of the manufacturer,—a clear white limpid fluid hardly distinguishable from water.

I am puzzled to know, indeed, what substances they may be which are separated by the defecating agents. So long as *mundi* was present I concluded that it was that; but I have lately manipulated liquor in which I could actually detect nothing but what had been put in, and yet we have proved that without anything sugar can be made (though the litmus paper be unreddened at all), and that not even with the after addition of lime. A thick scum forms on the top after boiling, and the syrup assumes a viscous character.

From the hopelessly black colour of the native jaggery made from limed liquor (*peni*), I thought good sugar could not be made from it. However, I procured a quantity for trial. The enormous quantity of lime that had been put into the chatties was soon apparent, and it was partly diffused through the liquor like a very fine impalpable sediment. Fine English towels would not stop it from running through them. I earnestly beg for assistance also to enable a plan to be established for the extraction of this floating lime. It is true that most settles to the bottom, as I have since found, and might be left behind by drawing off the supernatant liquor; but still some is lost, which I am anxious to avoid. Now herein seems to be a great difference between cane juice and *peni*. Whatever quantity of lime one puts to the former seems taken up by it, and to exert its baneful influence at once; but in the toddy, as I say, we find the most of it at the bottom, while the supernatant liquid remains quite limpid, and not to have taken up more lime than so much water would have done. Although by the first experiment with the limed liquor I did not succeed in getting out the half of the lime, which I estimated correctly at over an ounce to a gallon, the sugar did not turn out nearly so black as I thought it would have done, and is the sample marked No. 3. These trials, I may add, were all made with open chatties.

As regards filters, having remembered seeing, when the coolies poured out the chatty of water round the cocoanut plants, that all the vegetable impurities seemed to remain on the surface of the sandy soil, the idea of a sand filter occurred to me. In a box filter of fine wire cloth I spread three inches of sharp sand from the bottom of a well, and poured on gently the liquor to be filtered. The sand stopped even the most minute particles, and the liquid came through quite limpid. These sand filters acted in the most perfect manner possible so long as *mundi* was present,—it preventing, in some curious way, the fine particles of lime from choking the sand ; but having lately tried them with the liquor which contained none, they failed of their effect. They still stop every impurity, but soon get choked, and are thus too slow for practical purposes. But cane juice which has been defecated passes through well, and therefore I recommend a trial of these sand filters to sugar-makers. I noticed in this trial that the lime which remained in the liquor was taken up and dissolved by the sugar when the density of the syrup was about 20° Beaume.

In the next trial, the floating lime was taken out with the white of an egg to two gallons. Eggs are not generally admitted as legitimate materials for defecation, as not always procurable, but in a country where this would only add one-sixteenth of a penny to the value of a pound of sugar I am not so sure that they might not be occasionally employed. In this case they took every atom of lime out, and the result was an excellent sugar, the grain of which I purposely “broke” for claying,* and it is the clayed sample No. 4. Thus I came to the conclusion that lime, merely in solution, does not make the sugar dark, and only injures the result by forming an undue quantity of molasses. And yet all the

* An operation the use of which is now quite exploded, or ought to be.

drained syrups granulated well on being boiled a second and third time ; but if not for the lime, a very small portion of syrup or molasses would drain from it on the very first boiling, as I have since proved. Our toddy-drawer boiled a lot from which the lime had been extracted by egg, and to his great surprise the result was a jaggery actually whiter than that made from bark toddy.

I need not tell any sugar maker that it is a popular error to think that eggs make sugar or syrup white. The albumen has no decolorising power at all, but only removes those impurities which would have made the sugar dark. If therefore we extract these by any other means it will do equally well. If it be true, what the natives tell us, that bark will not prevent the juice from fermenting somewhat in rainy weather (though that I doubt), if we are compelled to use lime, it is just as well that we know how to get it out. A nut is sold in the bazaars called in Tamil *kaddukai*, and used by the tanners, but it is not the true gallnut. On the addition of an infusion of the powdered nuts to the strongly limed but clear liquor, a very abundant precipitate took place. The liquor, being filtered, was as brilliantly transparent as rock crystal, and all the subsequent processes perfectly satisfactory. I now find that the solution or infusion of *kaddukai* should be added to the liquor at the temperature of 140° to 160° , and that filtered a minute after reaching the boiling point. The precipitate was a reddish brown colour. The result of this experiment, which I have repeated since, using another material, gave the sugar No. 2. The *kaddukai* infusion gives a dark blue or nearly black colour with the muriate of iron, and forms a precipitate with the solution of gelatine. The following day, to give this experiment its collateral test, I ground twenty-five canes, which produced me two and a half gallons of juice, at 9° , to which I added two drams of lime. On the

addition of the infusion of *kaddukai* just as perfect a precipitation occurred as with *pēni*; after filtration it threw up no scum whatever, and was nearly colourless. Gallnuts are mentioned by Dr. Evans as one of the best defecating agents. I confidently recommend a trial of this to sugar planters, as I believe it to be of the last importance to extract the lime, and for the above idea I am indebted to the suggestion of a friend.

Before this I had ascertained a curious fact. Strange to say, though so large an amount of lime is present turmeric paper is not reddened unless the cream of lime is stirred up. But on adding a very great excess, the *pēni* will redden a solution of turmeric. This was done till the liquor assumed a light red colour. To this common alum was added at 140° , until a bulky precipitate took place, and all colour whatsoever disappeared. The liquor being filtered was remarkably clear and pure, and notwithstanding we know that the sulphate of potash is still present* and will exercise a baneful effect on the liquor, it did not seem to do so, but granulated freely. Perhaps the sulphate of potash may pass into the molasses. I tried this plan with a solution of very black cane sugar, and with the same effect, the precipitation discharging nearly all the colour.

The idea of the last trial which I shall detail is taken from a pamphlet by Mr. Gay. His words are: "The addition of tannate of lime and alum as the liquor came from the mill would effectually prevent all fermentation, and gelatine could be added during the succeeding process of clarification." I must here remark that I have frequently boiled liquor defecated by bark, and though it made good sugar found it possessed a certain thickness which I did not like, and an unwillingness to part with its molasses. However, this idea

* Evans, p. 103.

of gelatine, on being pointed out to me in Mr. Gay's pamphlet, seemed very applicable to our liquor. Being already saturated with the peculiar principle of the bark, on the addition of the gelatine a decided and very abundant precipitate at once took place, which was all stopped by a flannel filter, leaving a pure limpid fluid, which we all agree in thinking cannot contain much besides sugar and the salts (supposed to be of potash) peculiar to the cocoanut juice. Though boiled in a quantity of only three pints, in a wretched little earthen pot, which burned the liquor in all directions, as they all do, the sugar No. 1 was the result, and the molasses merely nominal,* while it was easy to see the syrup would have mostly all grained on a second boiling. This process I consider as the one in every respect the best, and I also recommend this to the cane planter. The pounded *hal potu*, in sufficient quantity, I would leave in the clarifier all the time the juice is running in from the mill; or if that were insufficient, a decoction or infusion could be added. The gelatine must be mixed and the liquor filtered, I think, below the boiling point, or even cold, but that must be ascertained by experiment. The vessels for clarifying must be of copper. I fully intend to prove this point as soon as our present wet weather shall clear up.

Having written the above, I was favoured with the opinion of a scientific friend on the subject, on which I have detailed the experiment just described. He says he has been studying the action of the bark, and does not think it contains any tannin, for in the first place it shows no action with iron, and moreover the precipitate which it forms with gelatine is soluble in lime water. (This is true, for I have proved it also.) He says further:—"I am inclined to think that it contains a peculiar principle capable of throwing

* None of the samples of sugar I send have been drained for more than two days.

down gelatine, but differing from tannin. I find that other substances throw down gelatine; for instance, hematine, the peculiar principle of brazil wood, does so, but the precipitate is soluble in hot water. The *kaḍukkāy* doubtless contains tannin, and its precipitate is tannate of lime. I tried, as you requested me, the gelatine; the result was the best sugar I have made, and the quantity also was more satisfactory. A careful quantitative experiment is necessary to determine the relative value of the bark and the chunam toddy. The lime certainly does favour the catalytic change of the sugar into glucose, but probably it would not if thrown down by the tannin before the application of heat. Tannin throws down almost every vegetable proximate principle, and gelatine throws down albumen, so that I think with this we get rid of everything out of the toddy except the sugar, the dextrine, and the salts. There is an innocuous substance which precipitates gum, and probably would dextrine also, but which from want of proper apparatus I am unable to prepare; it is silicate of potash. The preparation of this compound is very easy and cheap, and if it acts as I think it would, it would leave us just the sugar and the salts."

I have since tried some juice, substituting the rind of the fruit of the pomegranate for the *kaḍukkāy*. It had the same effect exactly, and the result is excellent. The bark of the ironwood tree I believe will also do, and perhaps many other barks and nuts.

The addition of a true decolorising agent, such as animal charcoal, to the liquor while boiling, effects a wonderful improvement in the colour of the sugar, even in an open pan. But as that would involve a second and far more tedious filtration, in whichever way it is performed, it may be doubtful whether we shall ever adopt it. However, we can manufacture the animal charcoal here as advantageously as

in any place in Ceylon. I have fancied that even a small flannel bag-full placed in the pan improved the grain of the sugar in one or two trials, and I found the liquor passed through and through the bag as it boiled.

The gravity of all the *páni* we have experimented on is very nearly the same, being about 9.5° Beaume. Sometimes the mouths of the *mutties* not having been well protected a little rain water has got in, as we judge from a suddenly increased quantity and lower gravity. On one or two occasions the juice reached 8.9° Beaume. There is no doubt therefore that in practice over a pound of Muscovado sugar would be extracted from every gallon, and I myself think more nearly a pound and a half, by the processes, either of bark or lime, detailed above, and I think it not unlikely that could the trees be kept constantly running (which indeed they could) the extraordinary quantity of 180 to 200 pounds of sugar may be obtained annually from every cocoanut tree. How much more ought to be obtained the new publications on sugar making take great pains to inform us, but none of them detail any method by which, except in the laboratory of the chemist, they can really state the true result to have been procured in practice.

Many speculations of different kinds of planting having been undertaken in this Island, perhaps without due consideration of its adaptation to them, it is truly satisfactory to have every day increasing evidence of the fact that this country is at all events eminently fitted for the perfection of the growth of the cocoanut tree. Here we cannot go wrong, and therefore I consider the subject in this particular rests on the solid foundation. Objections against all new ideas are always raised, and sometimes where we expected to find encouragement we are met with a doubt. I have heard it observed against the probability of the establishment of a manufacture of sugar: "Such great numbers of

men would have to be employed that it would be a serious objection." It is true that very numerous gangs will have to be looked for, and probably brought from India. And yet look at the Galle district. Only let a beginning be made and a demand for labour created, the supply will soon come, especially in a fertile, cheap, and abundant country as ours is. And to the objection as to numbers, all I can say is, that any scheme which shows that a great force of labour, and perhaps also necessity for the employment of European talent, is required, and can be profitably exerted in the carrying out of any object, that object must surely be deemed of some importance.

ON THE SAP OF THE COCOANUT
TREE, AND ITS MANUFACTURE INTO SUGAR.

BY W. S. TAYLOR, Esq.

(Read February 9, 1850.)

At a time when there are complaints made of decreased production of sugar in our West Indian Colonies, of the failure of cane planting in the Madras Presidency, and of the ill success which has attended some speculations of a like nature in this colony,—when the futility of the means adopted by the English for the abolition of slavery has been gravely announced, whereby the sugar growers of Cuba and Brazil are likely to acquire too great a predominance in the market, and well nigh a monopoly of the article,—it will prove encouraging to many who are interested in the general welfare and prosperity of Ceylon to hear that its far famed cocoanut palms are calculated to yield a large amount of excellent sugar, the manufacture of which it is to be hoped we shall ere long see established. When, too, it is considered what thousands of tons of sugar must be destroyed by the distillation of the sweet sap of this palm into alcohol, and the moral pestilence which this baneful liquor occasions, it must be ardently desired by every philanthropic mind that the sap, if taken at all, should be converted into a blessing in the form of sugar, instead of being perverted into a curse in the shape of arrack. By this means we should be entering the list against vice, and not only the vice of intemperance and its concomitant evils of crime and suffering, but we should also be active rivals of the

pampered slave-owners, and directing a thoroughly practical crusade against Negro slavery. Every consideration therefore both of profit and humanity stimulates us to carry out this idea. Yet it seems singular that it should never have been attempted before, as the sap, or "toddy" as it is generally called, has been, I presume, from time immemorial made into the form of jaggery, which is however a far inferior mode of rendering it useful for purposes of domestic economy, it being with difficulty prevented from deliquescing, while sugar, from its being in separate crystals of considerable hardness, offers more resistance to the humidity of the atmosphere.

Having seen small samples of sugar made from the toddy, I determined about three months ago to try two young trees, six years old and coming into bearing, to see what quantity of sap they would yield, and whether the product could be readily manufactured into a useful and marketable article, and as far as the experiments have been carried (only as yet on a small scale) the result is very satisfactory. The natives have long been in the habit of making a very superior kind of white jaggery, and therefore it was only natural to suppose that if they could succeed in making it either white or black (at least, some they make with lime is dark brown) at their pleasure, any one accustomed to sugar making could produce a superior article at once from the tree, it being also quite easy, as has been proved here, to make a good grained sugar from the jaggery, and even from the common impure article manufactured at Point Pedro from the palmyra toddy, used for binding fine chunam work.

There are several ways of taking the sap here, which it may perhaps be useful to detail before proceeding to the manufacture of the sugar: that is to say, the mode of cutting the flower-stalk is the same in all cases, but I mean

as to what is put into the pots to precipitate the feculencies and prevent fermentation. For drinking purposes alone it is taken without anything being put into the pots, the main point being then of course to get it to ferment as soon as possible, when, if taken for instance at six o'clock in the morning, it is sourish early in the afternoon, in which state it is drunk in considerable quantities, and is very intoxicating. For this purpose it is taken from the tree twice a day, the morning's toddy being drunk in the afternoon, and the evening's at night. Limed toddy can however be kept till three or four o'clock P.M. without change. The fermented toddy is sold regularly in licensed taverns,—taverns which I need hardly say are perfect *foci* of idleness and vice, gambling, &c. No one can tap his own tree to get the pure sweet toddy, were he inclined to drink it, without paying one pound a year to the "toddy renter." There is no tax however on taking it for making jaggery or sugar, under certain restrictions, *i. e.*, with an infusion of bark or lime, which of course are supposed to render it undrinkable. This is as it should be, and with such a law we can work with tolerable freedom. Perhaps, however, the sugar manufacturer might be allowed by special license to take it without bark or lime, if he found he could make a purer article without them.

For jaggery the best method is to put some pounded bark into the pots (*mutti*). This bark is called *tumpalam paddai* in Tamil, and *hal-potu* in Sinhalese. It is highly astringent, and the effects of its tannin is to coagulate and precipitate a white pasty sediment, and thereby prevent fermentation. This sediment is thrown away as worthless, but there is also some sediment found in the fermented toddy pots, which is used as a yeast for raising wheaten bread. Lime also is a powerful agent, as better not to use it, since it acts too strongly on the sugar

contained in the sap; the proportion of it, however, can be nevertheless so adjusted as not to have a very destructive effect; still, it generally causes the liquor to get more or less dark-coloured in the boiling, unless it be extracted by employing tannin or albumen, as will be elsewhere explained in my brother's paper on the manufacture of sugar, &c.

The toddy is called in Tamil *kallú* when it is used for drinking, and *páni* when it is intended to make jaggery or sugar. To obtain it the same method is practised here as in other parts of the Island. Sometimes trees which are not good bearers of nuts are selected for this purpose, which is merely done I presume in order that they may not be so unprofitable as if they only bore a few nuts—though a good bearing tree, one with large well-developed *pálaikaḷ* or flower stalks, is decidedly the best, and will of course yield more sap than an inferior tree. Whatever tree may be selected then, it is necessary that the *pálai* should be well matured and nearly ready to burst into blossom, at which time only it is certain to have a good flow of saccharine sap. The toddy drawer, called *Nalavan*, a peculiar caste, watches for this juncture, and at the proper time he ascends the tree—in the case of mine a mere step off the ground on to the lowest branch; but if the tree be lofty it is more difficult. In this case he makes a small circlet or fillet of palmyra leaf, leather, or coir rope, in which he inserts his feet to prevent their slipping apart; then, with the soles of his feet firmly pressed against the trunk and his arms closely embracing it, he alternately bends and straightens his back and thus climbs up the tall, snake-like stem. In the southern and western parts of the Island they do not require to ascend every tree separately, as there are ropes stretched from one to the other, along which the men pass safely and quickly at a great height from the ground, and this enables them to attend to about fifty trees a day each.

man,* whereas here, twenty to twenty-five trees are considered about the mark. At Galle especially, where a great many trees are rented for arrack in the same plantation, this is easily managed, but at Batticaloa very few trees comparatively speaking are devoted to toddy, there being such a steady demand for the nuts, and no arrack distilled here, that people prefer to let their trees bear. The *Nalavan* is provided with a cylindrical-shaped mallet, called *tadda-pudde*, made of a hard dark wood called *náka*, neatly turned; and a sharp, broad bladed crooked knife called *pálaik-katti*. Arrived at the top of the tree he seats himself quite leisurely on one of the broad branches, resting the *mutti*, before tying it on to the *pálai*, in the hollow of another, which seems just adapted to the purpose. At first he merely beats the *pálai* well, once a day, in the morning, and after the first time, and again after each beating, he binds the *pálai* firmly round with fillets of cocoanut and palmyra leaves, to prevent its bursting into flowers. On the third morning he slices off the horny tip of the *spatha*, or sheath of the flower-stalk, exposing to view the young flowers and perhaps one or two young nuts, which it is hardly necessary to observe are formed by a kind of cryptogamous generation in the mysterious recesses of the *pálai*. The flowers therefore which are seen on the numerous small side stalks which branch out of the main flower-stem are, I believe, the male flowers, which have to fecundate the embryo nuts. However this may be, all this process is interrupted by the first cut of the trenchant blade. The same evening the man slices a little more, and after that regularly twice a day, but he does not always beat it, only every three days, once in the morning. I

* I am told a man will actually take the toddy from two hundred trees, but probably with assistance.

suppose this is done to bruise the young flowers and nuts; and prevent their forming and exhausting the sap, which has to flow through the main and side stalks for our purposes perhaps somewhat different from what nature intended. Still it is quite as allowable to take the produce of the tree in this form as to let it mature its nuts with all their complicated structure of coir, shell, and oily kernel,—which one would suppose would task the tree quite as much as parting so readily with its sap can do,—which may in one sense be said to save the tree a great deal of trouble. By pursuing the above-mentioned treatment regularly, in from twelve to fifteen days, or less, the sap begins to exude from the sliced surface. At first, and for two or three days, it is too small in quantity to be worth collecting, and it is eagerly consumed by bees, wasps, and ants. In fact, I observed mine oozing out sufficiently to attract the insects on the seventh day, but the natives generally allow till the twelfth or fifteenth day before tying on the *mutti*, by which they may lose some, which perhaps we could not afford to do on a large scale. I observed the *pálaikaḷ* began to drip pretty freely on the ninth day, on the evening of which the *mutti* were tied on, and on the following morning they were taken down, and after being strained the liquor measured a pint and three quarters from the two trees, two *pálaikaḷ* on each tree being cut. After this the *mutti* were taken down and fresh ones tied on twice a day, no more tapping or beating being required, only regularly taking off a thin slice twice a day, to form a fresh surface for the sap to exude from, otherwise it would soon become clogged up and would not run at all; and this is continued till the *pálai* is sliced away to a mere stump; and this obviously depends on the length and size of the *pálai*—if a short one, as on a very young tree, it may be exhausted in from twenty to thirty days, but if a good sized *pálai* on an

older tree, it may last as much as forty days, or perhaps a day or two more or less. Bark toddy (*paḍḍai-pāni*) is taken from the tree twice a day, the *mutti* being emptied, washed, and burnt out with a little dry grass or straw and kept for the next time, and clean *mutti* immediately put on. When lime is used, however, it preserves the sap much longer from fermentation than the bark, for which limed *mutti* are not taken down till twenty-four hours have elapsed; but it is requisite for the man to ascend the tree in the evening and take off the *mutti* for a moment when he slices the *pālaiikaḷ* to make a fresh surface, and then replace them, only taking them down for boiling the sap into jaggery on the following morning.

I found that the trees soon began to yield an increased quantity of sap, which was boiled down to sugar or syrup in different methods, as explained by my brother. For thirty days I gave the two trees a fair trial, only ten *pālaiikaḷ* being cut on each, and the sap increased from $3\frac{1}{4}$ in a day or two to 7, 8, and even 9 pints a day from the two trees, when towards the thirteenth day it fell off to 5 or 6 pints. The average for the thirty days was $6\frac{1}{8}$ pints, or $1\frac{3}{8}$ pint from each tree per day. In the meantime two other *pālaiikaḷ* had been cut on one of the trees and one on the other, which gradually came into yielding, and I gave the two trees another trial; this time for thirty-one days, during which period the yield increased from 5 or 6 pints to 9, 10, and $11\frac{1}{4}$ pints a day; and the average from the two trees for the thirty-one days was $8\frac{1}{8}$ pints, or $4\frac{1}{8}$ pints per tree per day. Since the end of the thirty-one days—*i. e.*, about the middle and latter end of November, when there was only one *pālai* running on the smaller tree—it has frequently given 3 pints, which seems an immense quantity, as, if three or four had been running together at that rate, the tree would have given from 9 pints to a gallon and a half a day! At all

events, I am inclined to think that a gallon a day is but a reasonable yield to expect from each tree when arrived at a proper size and maturity and accustomed to yield its sap. The quantity of sap yielded by the two young trees in sixteen days from seven *pálaikaḷ* was $439\frac{1}{2}$ pints, or $54\frac{1}{2}$ gallons, or $7\frac{1}{2}$ gallons from each *pálai*. Add one eighth more *pálai*, which was matured but not cut, but might have been made to yield within the time, we have about 185 gallons in a year from each tree. These two trees give, say, 55 gallons in two months; one tree $27\frac{1}{2}$ gallons in the same time, or 165 gallons in a year. Add one eighth for a *pálai* not cut, we have $185\frac{5}{8}$ gallons per tree per annum. Perhaps 200 gallons from a good large tree might not be too much to expect. A greater quantity would probably have been obtained had we gone on cutting the *pálaikaḷ* as fast as they were ready, but I wished to stop to prove an assertion I heard, that after tapping a young tree for a short time it would bear nuts more abundantly than one which was not tapped. And I must say that, so far from the operation having tended to exhaust them, as some might imagine, the newly-developed *pálaikaḷ* are larger and longer than any previous ones, and promise abundance of fruit, while it is not less probable that they would have yielded more toddy than any other had they been tapped in their regular turn. From the rains having set in, and other circumstances, I am waiting some time before recommencing toddy-drawing operations.

It is rather difficult to come to a decided conclusion of how much a tree will give in a year. The quantity of toddy must of course be proportioned to the number of *pálaikuḷ* that come out on a tree. Ask any native and he will say the trees get one *pálai* and one new shoot, or branch, every month, but there would seem to be no fixed rule for this, as more come out on some trees within a given time, and more on one tree than on another. I think two a month, or three

in two months, is much more likely to be the rate, but then some trees grow much faster than others. One of my trees matured and would have burst six *pálaika* between August 28 and November 20 ; the other tree only four in that time.

The sap, or *peni*, with bark infused, gives a much whiter jaggery than that which is limed, the latter, as made by the native method, being nearly black and full of impurities. Very few of the natives, however, take bark toddy, as they consider it more troublesome and expensive, though the jaggery makes amends for that by fetching a higher price.

The difference between the preparation of jaggery and sugar is merely this. For jaggery the liquor is boiled till it is extremely thick, and it is kept boiling and well agitated with the ladle to prevent its burning till it is quite inspissated, so as to be merely kept in a semi-fluid state by the heat : it is then turned into moulds (generally cocoanut shells), when it immediately cools into a hard concreted mass without any distinguishable grain ; whereas sugar (after being properly clarified) requires only to be boiled very carefully, yet quickly, till it attains a certain degree of tenacity, which is known to the experienced boiler as the “point.” It is then taken off, “skipped” into another vessel called the cooler, in which it ought to part with its heat gradually : so they are generally made of wood, and this ensures its forming a good strong grain. It does not, however, become quite dry till it is transferred into a second vessel, constructed so as to drain off the superfluous syrup which will not grain ; and this is termed the molasses. This will sometimes grain on being boiled again, and it is a curious fact that the molasses from cocoanut, or coco sugar, even when the liquor has been very highly, perhaps excessively, limed, grains much more freely than that from cane sugar ; and this process may even be repeated several

times with a clear gain of sugar each time, till at length the remaining molasses is so trifling in quantity as would hardly require a still to work it off into rum (or arrack, whichever it might be termed), which is so necessary an adjunct to a cane-sugar making establishment. Nevertheless, it is probable a small still may be maintained with advantage to entirely prevent waste by the accidental souring of the liquor, working off whatever molasses there might be, &c.; but as to skimmings, the liquor can be so easily clarified, being much more manageable than cane-juice—there is hardly anything to skim off from the first boiling of the “skip.”

I have, since writing the above, heard so many statements that the continual drawing of toddy would injure the trees, that perhaps it may oblige us to intermit our operations for three months, during the season in which the hot land wind blows—say, June, July, and August.

ON THE ELU LANGUAGE, ITS POETRY AND ITS POETS.

BY JAMES DE ALWIS, ESQ.

(*Read February 23, 1850.*)

CONTENTS.

THE apparent inattention to the study of the Siphalese—The present low state of learning in the towns—The *Elu* defined—The derivation of the terms *Elu* and *Siphala*—The apparent difference between the old and the new styles in prose accounted for and exemplified—The general destruction of the Siphalese literary records—That *Elu* and *Siphalese* are synonymous terms proved—Authorities cited—That the *Elu* and the Sanskrit had one common origin—The Siphalese alphabet analysed—The formation of the letters pointed out—The *Sanskrit* and *Pāli* characters embodied in the Siphalese alphabet—The sound of *f* found in the Sanskrit—Prose writings in the Siphalese classified—Examples—The Siphalese poetry defended against slights with which it is treated by Europeans—Similarity of thought between English and Siphalese poetry instanced—Translation of English and Siphalese poetry—The translated Holy Scriptures—The different kinds of poetry—Examples and rules of versification—Three diagrams—The *ဝိသေ* poem with a translation—*Yuvata* verses—An attempt to ascertain the date of “*Sidat Sangarāva*”—Several species of puns in poetry, with examples—Acrostics—The twenty-six Siphalese epithets for Buddha in general critically translated and explained—Siphalese *dialogues* explained and illustrated—A few rules of Siphalese prosody—The eight rythmical feet in poetry—Native prejudices against some—Examples—The evil characters, &c.—The diagram called *မုသေ* explained—The four *Yavahan*—Examples—Brief notices of the poets and their works, with an attempt to ascertain their dates—“*Kāvyaśékara*”—“*Seḷalihinī-sandēṣa*”—“*Parawisandēṣa*”—“*Moggallāyana Patipanchikā*”—the “*Pera Kumbā Siritā*”—“*Kowulsandēṣa*.” (*To be continued.*)

INTRODUCTORY REMARKS.

It is not easy to explain the reason why so little attention is paid to the study of *Elu* by the Sinhalese. Many are the conjectures on this subject. Whilst some, it is said, have not the necessary time at their disposal, others complain of a want of teachers and books. Numbers having the means and time necessary for its study deprecate it as little less than *useless*. Others, though possessed of all the desirable advantages, devote their time to the study exclusively of the dead languages, ill-acquainted with, if not ignorant of, their own.

It is matter for regret to the writer that the Sinhalese should so far neglect their own language; that though they use it in their everyday intercourse, and thereby shut themselves out from the possibility of acquiring a correct idiomatic knowledge of a foreign tongue, they, or at least the greater portion of the rising generation, should yet be incapable of carrying on an intercourse for any length of time without introducing Portuguese, Dutch, or English terms—a practice which, I regret, is gaining ground in the towns of this Island. I am however free to admit that with the introduction of European institutions, manufactures, &c., European words and names before unknown to the Sinhalese must necessarily obtain amongst them: as for instance, මරලෝසුව, *Portuguese*, ‘a watch’; බුදලේ, *boedel* in *Dutch*, ‘estate’; කුස්තමිහෙයිසිය, *English*, ‘custom-house,’ &c. But how can anyone therefore justify the admixture of pure English words with the Sinhalese—*e. g.*, උයස trick එකක් play කරයි for උයස ප්‍රයෝගයක් කරයි, ‘He has played a nice trick.’ The writer has with regret observed the ridicule and contempt with which Europeans have frequently treated language such as the above, and that to his readers will furnish a satisfactory apology for the introduction of the subject in these pages, besides an

anxiety on his part to bring the subject prominently before his native readers, with a view to the discouragement of a practice which exists to a lamentable extent—a practice, too, from which no good results, since they who use a mixture of English terms neither think in English, and thereby exercise an easy mode of acquiring the idiom of that language, nor habituate themselves to a correct and fluent expression of their native tongue.

From such a state of things—I had almost said the degeneracy in literature—one would be led to believe that the Sinhalese language is defective. But this is not so.* Such a belief would be inconsistent with the existence of books treating fully on a variety of subjects. It is said, however, that the books are written in Elu and not in the Sinhalese. This, again, is a mistake. *There is, in fact, no difference between the Sinhalese and Elu.* Owing to a plurality of vulgar terms which the natives use in their everyday intercourse, and also to a belief that “the dialect in which the Sinhalese works are written is called Elu,”† Europeans have been led to this supposition.‡ But they are both appellations for one and the same language, although it is true that from time to time the Elu, like the English, has

* “The Eloo has undoubtedly given birth to the vernacular language of this country. It appears to claim great antiquity, and being derived from the *Sanskrit*, a great proportion of the words may be traced to that source. This language is copious, and must, in former periods, have been cultivated to a high degree of perfection; it is regular in its grammatical construction, and possesses most of the elegancies of style; and, from the numerous works which are still extant, it is evident that it is capable of being used in every species of composition.”—Clough’s “Sinhalese-English Dictionary,” preface.

† *Vide* C. A. S. Journal, 1846–47, No. 2, p. 103.

‡ The Rev. B. Clough, in his “Sinhalese-English Dictionary,” p. 799, gives the following definition:—“*ඌඌ*, the *Elu* or ancient language of Ceylon.”

undergone a slight change.* Again, it is incorrect to say

* එබඳු පෙර පියොවක්
දුටුව දකෝ හැරබෙත්වත්
දිව්වදනෙම් යත්යත්
පෙරලේ දකොමසියබස.—*Swābhāsalankāre.*

"Although such tricks (of composition) previously existed, it is improper to attempt them now; for, unlike the language of the gods (Sanskrit), the Sinhalese is not without a change from time to time."

The change here alluded to consists in the present disuse of certain words now obsolete, the introduction of many particles which were anciently omitted in composition, and in the abundance of certain decorations of style which were formerly avoided. The following, which I have elsewhere translated, will explain the difference:—

EXAMPLE 1.—පහන නමරන්ති බමන බමරඉඵ නමම පිරියෙස් සරණ නිමිර බලලවලා, when rendered into the modern, is read as follows:—පහන්වූ කල්හි නොඑම්මල්හි හැසිරෙන්නාවූ බමරයෙකුගේ අඳුරුනැමති මවු සොයමින් ඇවිදින අභිකාරපැයක් මැත්තෝයි.

EXAMPLE 2.—සරණ නමර වරලස, සෙබෙලවලකර අරියන : රඳුව පෙර කළවමන්, කුසනිරිදු කොසමෙලේ, in modern prose reads as follows:—පාදනැමති නොඑම්මල්හි කෙසෙන්නැමති සෙබෙල් ගමසා ආරාධනාකරන් නාවූ රජපුත්තියන් පෙර කලාවූ අවමානායන් කුසරජ්ජරුවන්වහන්සේ කලාපා කොසෙලේය.

In the first example, බමන is the Sinhalese for the Sanskrit word බ්‍රමන, which is now used. I have, however, given හැසිරෙන්නාවූ, which is more frequently used. නිමිර is of less frequent use than අඳුර, and බලල්, the substantive form of the adjective බල, is obsolete, because, perhaps, the same is used for cats. වලා, as a term of comparison, is now obsolete.

In the second example, සරණ, "feet" (a word which occurs in the first as the verb for "walking"), is obsolete except in poetry. වරලස, in common parlance, either an ironical or sarcastic expression, is frequently used in poetry. නැමති, a term of comparison, was anciently, and is still, omitted in poetry, as in යොවුන්සසුර for යව්වන නැමති සහරස; in prose, "the ocean of youth." The decorations of style to which I have alluded, and which are particles and honorifics, are the following:—කල්හි, මල්හි, වූ. නැමති, හි, වූ, විසින්, වූ, වල්, ජරුවන්වහන්සේ, ය, &c.

From the above examples it will be perceived that the modern prose is much more redundant in its style than the ancient, of which a few passages occur in the "Sīdatsaṅgarāwa" and "Lakunūmīna." My own suspicions are that this arose from the decline of the Sinhalese as a language after the general destruction of literary records in the reigns of several kings, and also from a frequent reference to, and a close imitation of, the paraphrases and commentaries, being the great bulk of prose, remnants of an ancient date which *ex-necessitate* adopt the redundant style—a style ill-adapted to other species of composition.

that the ancient books were written in Elu and not in Siphalese. The “Sidatsangarāwa,” an Elu work (assuming that the ancientness of its date is the criterion which should decide the question)—a work indeed written in the most concise ancient style—designates the language of which it treats වගරවසුසියසය, “the colloquial Siphalese”; and “Námāwaliya” (which is a vocabulary of terms contained in all confessedly Elu works) calls the language of which it is a dictionary “the Siphalese.”

පද බැඳ කියමි නාමාවලිය සිංහල.

“I sing in rhyme Námāwali Siphalese.”

Now, those who maintain that an ancient obsolete dialect was the එළු different from the සිංහල, will not deny that the two books above quoted are in that so-called dialect.* How then will they who give the two words different meanings, reconcile their opinion with the positive assertion of the learned writers themselves as above cited, both of whom designate the language of which they wrote “the Siphalese”?

Some writers have also defined the word එළු to be that dialect in which the poetical works of the Siphalese are written,† doubtless intending to draw a distinction between the poets of old and those of a comparatively recent date. This is incorrect also. Any one who will be at the trouble

* “සිදත්සංගරාව or සිඛානසංග්‍රහය—A Grammar of the Elu or Ancient Language of Ceylon.”

“At a much later stage of my proceedings another native production came into my possession, the නාම වලිය, a vocabulary of Elu nouns.”—Clough’s “Dictionary,” preface, vol. II., p. xix., p. 733.

† “Their scientific writings are generally to be found in Sanskrit; their religious writings in Pali; whilst their poetry is in a dialect of its own, the Elu.”—C. A. S. Journal, vol. I., p. 36.

“එළු ආකාරය had been composed to facilitate the study of the purest Elu authors, especially the poets.”—Clough, l. c., vol. II., p. xix.

to compare together all the poetical works of the Sinhalese will find that they are all (with the exception of a few in blank verse) written in the same poetical style now used amongst the literary Sinhalese, and that there is no real difference approaching to anything like a dialect between any two of them. Indeed, I fail to perceive any difference of dialect between *Totagamurva*, the father of poetry after "the destruction" to which allusion has already been made, and the celebrated *Miripenne* of the present day. It is however possible that several words which occur in the old poetical works are no longer in use. This, I apprehend, is not a sufficient reason to justify the conclusion that the so-called old dialect was not the Sinhalese; for, otherwise, we may with equal reason say that Milton and Shakespeare were not English poets.

But I trust the question may be satisfactorily disposed of by an inquiry into what the poets themselves called the language or dialect which they wrote. For if (as it is supposed) there be a difference between *Elu* and Sinhalese, and, moreover, if the first is an obsolete dialect succeeded by the second, the old writers alone could have designated that which they wrote the *Elu*. Far from this being the case, some of the old writers have called the language in which they sang the Sinhalese; and some of the modern have designated it the *Elu*. And very often the same writer has given both the appellations. A reference to books will clearly show that—of which, however, I have no doubt—the *Sinhalese* and *Elu* are synonymous terms, and have always been used as such, notwithstanding any slight changes that may have taken place from time to time in the construction of sentences, or in the formation of words, or the elision of letters in the language of the Sinhalese.

Having but few books to which I can at once have

recourse, I shall quote but few passages in addition to the two extracts already given :—

1. මේ පිළිවෙළින් එළුදන්නේ.—*Lakunusara*.

“Thus is the *EĻu* to be known.” (Before 1415 A.D.)

සියබස්නි වනු හේමෙසේ.—*Ib*.

“They thus occur in the *Sinhalese*.”

2. කියමි එළුවෙන් මදක් පදබැඳ.—*Kāvīyasékaré*.

“I do sing a little in the *EĻu* language.” (1415 A.D.)

3. එබැවින් එළුවෙන් කිවසි අනෙදර.—*Lōvēḍasangrahava*.

“That I have sung in *EĻu*.” (1472 A.D.)

4. අපරමර මොක්පිණිස සිංහලබසින් කවිකලෙ නිසි මෙ කුසද.—*Kusajātaka*.

“With a view to *Niwaṇa* devoid of death and decrepitude, I have composed ‘*Kusadā*’ in the *Sinhalese* language.” (1610 A.D.)

5. සිහලබසින් සැකෙවින් කියමි පදබැඳ.—*Subāsité*.

“In *Sinhalese* rhyme do I sing.” (1612 A.D.)

6. මකරද්දර නමින් කී එළුපද අමුතු.

“*EĻu* stanzas by the name of *Makaraddaja*.” (1768 A.D.)

7. එළුබස නගා රසකර.—*Kavminikoṇḍola*.

“The *EĻu* language sweetly rhymed.” (1771 A.D.)

8. ගහරුපුදය කවිකලෙ හෙළබසින් මනා.—ගහාරෝහ හේ.

“I have rhymed in pure *EĻu* ‘the offering in the river.’” (*Kiramba*, 1807 A.D.)

9. මෙසියබසින් කවිකලෙ නෙක විරිතයුත.—*Siyabasmaldama*.

“I have rhymed in several tunes in *Sinhalese*.” (*Kiramba*, 1821 A.D.)

10. සියබසිනි කවිකර.—*Nikinihatā*.

“Rhymed in *Sinhalese*.” (1832 A.D.)

11. නමමින් එළිය.—*Karmini pahana.*

"Rhymed in *Elu*." (1840.*)

An inquiry into the derivation of the words එළිය and සිංහල will also furnish us with further proof in support of the position advanced by me.†

The term එළිය (*Elu*) is derived from සිංහල (*Sinhala*), which mutated into සිල, සිල, සෙළ, and හෙළ, produce එළිය. But scholars are by no means agreed upon this definition. According to some it may be from එ and ලදිම් (එලදිම්), ‡

* Since the above extracts are nearly every one of them from the Sinhalese poets, and lest the reader may therefore be inclined to the supposition that *Elu* is the designation for a so-called "poetical dialect," the following prose selection from the introduction to the *Pansiya-panas Jātaka* may not be out of place:—

අප්‍රියාසාමීන් ලී ජනකයා නිසාව නොවරදවා එළියෙන් ලියවූ ජනක කථාව සන්පුරුද්ව මනුෂ්‍යයන් විසින් කන් යොමා සිත් එලා ඇසිය යුතු.

"It is proper that good people, having given their ears and bent their minds, should hear the *Elu* version of 'The History of Lives,' composed without departing from the method of the writer of the *Aṭṭadāsa*."

† The following passage is from the *Pradīpikāva*: සිංහලභාසා යන නමෙහි සිංහලභාසා නම් කවරයන්?

"At the place where mention is made of the 'Sinhala language,' what can *Sinhala* language mean?"

The writer, after explaining why the Sinhalese were called *Sinhala* and this Island was called *Sinhala-dwīpa*, proceeds to answer the inquiry thus:—

යම්යෙ මෙයථවු ජනයෝ මෙබඳුයෙන් කියනු ලැබෙද්ද, එසෙයින් මේ සිංහල දෙසථවු ජනයෝ සිංහල බඳුයෙන් කියනු ලැබෙත්; ඔවුන්ගේ භාෂා සිංහල භාෂා නම් වේ.

"As people who are natives (of a place) speak in (their) native tongue, so likewise the people of this *Sinhala* country use the *Sinhala* speech. Their language is called the *Sinhala* language."

The above furnishes us with almost conclusive proof against the position that the *Elu*, but not the *Sinhalese*, was the ancient language of the Ceylonese. For, if according to *Guruṭugōmi*, the writer of the "*Pradīpikāwa*," both Wijayo's followers and their language were called *Sinhala* from the period of their landing in Ceylon, it is impossible to maintain that *Elu* considered as a dialect different from *Sinhala* was "the ancient language of the Sinhalese."

‡ කොසින් නිවකෙලෙමි කවි හෙලදිම්බසිනි.—*Kavyamuktāhāre*.

"Have I in *Heladiv* (Lanka's) language with pleasure finished my song?"

“Lapka,” the last word contracted and added to the particle එ producing එලු or එළු. It is however to be remarked that the first of these definitions has not only the support of grammar, but the authority of the best scholars of the day; is apparently more correct than the second; and that both support the view that *EĻu* and *Sinhala* are terms for one and the same language without distinction of dialects, in that there is no difference between the two roots, since the one has reference to the nation (සිංහල *) and the other to the Island (ලක්දිව) which that nation inhabits. But a question has been very frequently proposed, which has been, I believe, never satisfactorily answered: “What is the EĻu language? Is it a dialect of the Sanskrit?”

We have already seen that the *EĻu* was no other than the *Sinhalese* language: but the question still remains, “Is it a dialect of the *Sanskrit*?”

Though at the risk of incurring the censure of some who maintain the affirmative, I shall venture upon laying down my own humble views on the subject, counter, I regret to say, to those of many whom I respect.

Let us first inquire “What is a dialect?” It is defined by several lexicographers thus: “DIALECT, *dialectique* F., *dialectica* L., *dialetike* G., is a manner of speech peculiar to some part of the country, and differing from the manner used in other parts, yet all using the same radical language as to the substance of it.” Now, those who maintain that the *Sinhalese* is a dialect of the *Sanskrit*, do so upon the ground that many words are derived into the former from that rich and invaluable source the *Sanskrit*. But this is no more correct than that the Portuguese which abounds with Latin terms and the English with French are

* “The name given in Ceylon subsequent to the landing of Wijayo, from සිංහල, *lion*, and the root එ, *to destroy*.”—Turnour.

respectively dialects of the languages from whence such terms are derived. If also the premise for the conclusion under consideration be correct, we may reasonably affirm that the Sinhalese is also a dialect of the Mágahadī or Pāli, for words derived from the Pāli into the Sinhalese are as generally abundant as those from the Sanskrit. Indeed, the author of the "Sidatsangarāwa" says :—

"Words may be divided into three classes : (i.) නිසින, purely native Eḷu words ; (ii.) සසම, words common to Eḷu, Pāli, and Sanskrit ; and (iii.) නිමිම, words derived from the Pāli and Sanskrit, but slightly different from the original by their adoption into the Eḷu."

Upon the above process of reasoning we may well conclude that the Sinhalese is a dialect of the Sanskrit and Pāli. But this is absurd, if on no other ground, upon a view of the definition with which we have set out. For, since the Eḷu has words of its own, and words, too, which, though bearing some affinity to, are not derived from, the Sanskrit, they cannot be pronounced to be the same radical language as to "the substance of it."

Again, a language and the dialect of that language are not diverse, but one and "the same radical language": *e. g.*, the *Attic*, the *Ionic*, the *Doric*, and the *Æolic*, are dialects of the same radical language, the *Greek*, and agree with each other in the general principles of declensions, conjugations, &c., but, I believe, differ from one another in spelling or pronunciation, or both—variations which, in the words of our definition, affect merely the "manner of speech" and "the manner used." The Sinhalese is however different from the Sanskrit in more than one substantial point. A great portion of the language is not derived from the Sanskrit: the Sinhalese has but two genders, whereas the Sanskrit has three: in the former, the verbs are not conjugated as in the latter; nor are the roots the same in both. The changes which words undergo in the Sinhalese are

altogether upon a process different from, and less certain than, that in the Sanskrit. The declensions are also different in the Siphalese from the Sanskrit, the dual being unknown to the former, &c. If further it can be shown that the Siphalese is capable of being written without an admixture of Páli and Sanskrit terms,* I apprehend there will be no difficulty in establishing my position, which is this : *that the Siphalese bears an affinity to the Sanskrit, and that they are both cognate languages, derived from one and the same source, which is perhaps now irrecoverably lost.*

If, as I have once heard, it be maintained, because certain words in one language bear affinity to others of like signification in another language, that therefore the former must be and is a dialect of the latter, I fear we shall be driven to the absurdity of pronouncing the Siphalese to be a dialect of the English,† and the Sanskrit a dialect of the Latin. For “the Sanskrit language,” to quote from Sir William Jones (*vide* his works, vol. I, p. 26), “whatever be its antiquity, is of wonderful structure: more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and in the forms of grammar, than could possibly have been produced by accident—so strong, indeed, that *no philologer could examine them all three without believing them to have sprung from one common source, which perhaps no longer exists.*”

* The writer's acquaintance with the Sanskrit and Páli is indeed inadequate to illustrate this part of the subject with an example; but upon the authority of the “*Sidatsangaráwa*,” it is to be presumed that a language of which two-thirds are *nípan* and *tasama*, is capable of being expressed without a mixture of the Sanskrit, &c.

† *E. g.*, *lop*, ලොප්; *door*, දොර; *mud*, මඩ; *water*, ඔහුර; *hour*, කොර; *serpent*, සර්පි; *new*, නව; *way*, මේ; *name*, නම; &c.

Just so with the Sinhalese. The affinity which it bears to the Sanskrit is great, so that the conclusion is not that the former is a dialect of the latter, but that they had one common origin. This view seems to be confirmed by the opinion of Dr. Stephenson, who, in a paper read before the Royal Asiatic Society "On the Maharatta Language, on its connection with the other spoken dialects of India, and on its derivation from the Sanskrit, Persian, and other sources," says: "It was thought at one time that all the spoken dialects of India were merely corruptions of the Sanskrit; and although many words were found in those dialects which could not be referred to that source, it was supposed that those words had merely crept in by reason of the barbarism and carelessness of the speakers, who introduced them from ignorance of the correct terms. This opinion, however, lost ground as our acquaintance with the native languages increased: and it is now pretty generally admitted that those of the south of the peninsula at least are of origin quite distinct from the Sanskrit, and that they have admitted words of that language, not from a want of native terms, but from the influence of religion, all their orthodox writings being composed in Sanskrit."

Now, the Sinhalese is unquestionably an Indian dialect; and Dr. Stephenson conceives that the case is the same, though in a less degree, with the other languages of India; that in all of them the Sanskrit is grafted on an aboriginal language; and that, proceeding from the north, it diminishes in quantity as we go southwards, becoming scarcely anything in the vernacular Tamil: in the same way as in Europe the influence of the Latin, which is predominant in the south, decreases as one approaches Britain and Germany.

To the Elu language, then, which is the Ceylonese or Sinhalese, are known ten vowels and twenty consonants. The vowels are subdivided into ඵු or ටු "short," and දුරු "long."

In fact, the short vowels, ခ, ဓ, ဠ, ဗ, and ဩ, are rendered long thus : ခ, ခံ (or ခံ), ဓံ, ဓံ, and ဩ. Each of the twenty consonants, က, ဂ, င, ဝ, ဖ, ဇ,*, ဘ, င, ဘ, ဗ, ဝ, ဩ, င, ဝ, ဩ, except ဝ (some of which are otherwise written to produce corresponding aspirate sounds, but which are not here reckoned), may be so expressed as to produce all the sounds of the vowels, both long and short. Thus, take, *e. g.*, the first consonant က. It contains the sound of ခ. Render it ကံ, it produces the sound ဓ; render it ကု, it produces ဠ; render it ကေ, it produces ဗ; render it ကော, it produces ဩ. So likewise are the five long vowel sounds produced by rendering က into ကံ, ကံ, ကု, ကေ, ကော. The other consonants may in like manner be varied, except the last ဝ, which, being immutable, and having no vowel sound associated with it, cannot be uttered without the help of a vowel sound, and it is usually expressed in the alphabet with the first vowel, thus, ခဝ. The nineteen consonants thus produce ten times nineteen, or one hundred and ninety sounds. Add to this number the unchangeable consonant ဝ and the ten vowels, and we then have two hundred and one, the total number of sounds which compose the Siphalese alphabet. These, according to the author of the "Sidat-sangarawa," are all the symbols which are necessary for a correct expression of the Elu; yet we find two letters or sounds exclusively Elu which are not included by the grammarian in the above number. They are ခ and ခ, and are the vowels by whose assistance the changeable nineteen consonants are rendered က and က; ဂ ဂ, &c. Thus, by adding ခ and ခ and twice nineteen consonant

* The general use of this guttural sound must here be explained, since there is another dental, ဘ, having the same sound. ဘ is used after ဝ or ဂ, thus: ဘဝ "feet"; ဘိဝ "Buddha." But where the ဝ or ဂ is not in the same syllable with ဘ, the dental should be used, as in ဘဝ "gods and men," and ဘဝ "last name."

sounds which are formed by their assistance to the two hundred and one sounds to which I have already called the reader's attention, we obtain the two hundred and forty-one sounds in the Sinhalese language.

Beside the above, it must be remembered that some of the consonants have different forms producing corresponding aspirate sounds. They are not used in the Eḷu, except in expressing words of a foreign origin, and are therefore omitted in the "Sidatsangarāwa." But since they are essential to a correct expression of the Pāli and Sanskrit (languages which the Sinhalese anciently used in common with the Eḷu), and also of *tabava* words (words derived into Eḷu from either the Pāli or Sanskrit), these aspirate letters with several others which I shall hereafter enumerate are found in the Sinhalese alphabet.

The aspirate letters or sounds are the ten following :—ඛ, ඞ, ට, ඨ, ඩ, ධ, ඳ, ඹ, ය, and ර.

The Sinhalese alphabet also contains six Sanskrit vowels, සා, ඍ, ඳා, ඹා, යා, and the unchangeable : expressed with the first vowel, thus, ආ. It is by their assistance that the Sinhalese or Eḷu consonants, which are common to both Pāli and Sanskrit, are changed into සා සාඞ, ඳා ඳාඞ, ඹා ඹාඞ, යා යාඞ, &c.

I must not here omit to mention, that besides the above there are several Sanskrit and Pāli consonants which are inserted in the Sinhalese alphabet. They are ඞ and ඟ, Sanskrit exclusively, and ඛ, ඪ, and ණ, Pāli and Sanskrit.

To these may be added several compound or mixed letters which are formed by a union of two consonants : ඞ, ඪ, ණ, ඬ, ත, ඣ, ඤ, ඦ, and ට.

ඞ is common to all the three languages. In Eḷu it is sounded differently from Pāli and Sanskrit. Thus, අඞ, *aṅga* (Eḷu), "horn," is pronounced more softly than ගඞ, *gaṅgā* (Pāli and Sanskrit), "river." This letter is formed in Eḷu by

a union of െ and േ, and in Pāli and Sanskrit by incorporating േ with െ. It is however, though mistakenly, supposed that its formation in the EĻu is the same as in Pāli and Sanskrit.*

ඨ (Pāli and Sanskrit) is compounded of ඤ and ට, as in ටඨ, *vañchá* (Pāli and Sanskrit), “deceit.”

ඡ. This form, also common to both Sanskrit and Pāli, although less frequently used in the former, is compounded of ඤ and ජ, as in ඡඡ, *añja*, “anoint.”

ඤ is exclusively Sanskrit, and is a compound of ජ and ඤ, as in ප්‍රඤ, *prājña*, “pandit” or “scholar.”

ඈ is common to both Pāli and Sanskrit, and is formed by a union of ට and ඩ, as in ඈඩ, *aṭṭha* (Pāli), “eight.”

ඞ is used in all the three languages, and is a contraction of ඞ and ඩ, as හඞ, *haṇḍa* (EĻu), “sound”; ගඞ, *gaṇḍa* (Pāli and Sanskrit), “fruit.” As is the case in all the compound letters used in EĻu, this is pronounced more softly in EĻu than in Pāli and Sanskrit.

ඹ is exclusively an EĻu character, compounded of ඞ and ඞ, and is pronounced softly as in හඹ, *haṇḍa*, “moon.”

ඪ, common to Pāli and Sanskrit, is produced by a union of ඞ and ඩ, as in ඪඪ, *buddha* (Pāli and Sanskrit), “Buddha.”

ඬ, used in all the three languages, is composed of ට and ඩ. In the EĻu it has the soft sound, as in ආඬ, *aṃba*, “mango”; in Sanskrit and Pāli hard, as in ආඬ, *aṃbu*, “water.”

ඬ, common to Pāli and Sanskrit alone, is formed by a union of ඞ and ට, as in ඬඬ, *dvaya* (Pāli and Sanskrit), “two.”

ඬ is peculiar to the Sanskrit, and is a compound of െ and േ, † as in අඬ, *aṇṣa*, “side.” I may add to the above ඬ, common to EĻu and Pāli, and formed of ඬ and ඬ, as කඬ, *kaḷu*, “black.”

All the characters which are comprehended in the 241 already enumerated are used in the Pāli and Sanskrit, with

* Vide එළුඤ, EĻu Prosody, p. 1.

† In EĻu as in Pāli െ “corresponds with the French *n* in *mon*.”

the exception of ආ and ඈ , which are peculiar to the Eḷu ; ඊ , which is used only in Eḷu and Pāli ; and ඉ and උ , which, though used in Pāli and Sanskrit, are therein pronounced long, as ඉ and උ .

It is not a little curious to find that the sound of ඳ , utterly unknown to the Sinhalese, and so difficult to be pronounced by the natives, is to be found in the Sanskrit. See *Sarasvatīvyākaraṇe*.

A brief elucidation of the so-called Sinhalese alphabet leads me to a consideration of the prose writings of the Sinhalese, which I confess are not so many and varied as their poetical works. Nor indeed are they so recent as the last-mentioned.

In prose, as in poetry, nothing is more to be desired than clearness and elegance of expression. What that clearness and elegance are can be decided by none but those intimately acquainted with the language ; for that which is elegance in the English is the very opposite in the Sinhalese. To enter into a detail of the rules of composition is indeed to translate the "Sidatsapparaḥwa" into English. But since the object of the writer is to give the English reader a sketch of the distinguishing features of the Sinhalese literature, I may as well call his attention to the *sine qua non* in Sinhalese composition, the necessity of introducing one's entire thoughts and ideas on a subject into one unbroken sentence. In this respect the Sinhalese is as different from, and as much opposed to, the English, whose "soul" is "brevity," as any two things can possibly be. If the reader will take the trouble to examine some of the prose writers, he will find a great similarity between their writings and the superabundantly exact style of an English conveyancer, or the tedious legal phraseology of an Act of Parliament.

From my limited reading I have been able to divide the prose compositions into but three classes : (1) the simple or common, (2) the elegant, and (3) the refined.

(1) The first, which I shall call the “common,” is that without ornament, the elegant style of an English scholar. Of this species the following from the *Sidatsangaráwa* is an example :—

පහන තබරන්ති බමණ බමරමුළු තමඹ පිරියෙස් සරණ තිමිරබලලේවලා.

A swarm of bees, which in the morning hover over (in) the lotuses, are like the offspring of darkness walking in quest of their parent of darkness.*

(2) Of the second, which is the Sinhalese decorated with all the glittering ornaments of compound words, comparisons, &c., and which in English may be denominated “the verbose,” the following is a specimen from the introduction to the *Bauddha Śatakaya* :—

ශ්‍රීමත්ථවුට්ඨපයෙහි සකල විද්‍යානිධානවු ගෞඩදෙශයෙන් ශ්‍රී ලංකාවිපයට පැමිනි තඝ්ථකරණ කාව්‍යනාටකාදි සමසහ ශාස්ත්‍රයෙහි නිපුණ කාතකයනගොත්‍රසමතුන ශ්‍රී රම වසුභාරති නම් බ්‍රාහ්මණ පණ්ඩිතොත්තම කෙනෙක් ශ්‍රීසඬ්ඝ බොධි ශ්‍රී විජයබාහුපරිච්ඡේදිපති ත්‍රිපිටක වාහිශ්වරවාය් ශ්‍රී රහුලසථවිරපාදගන්වහන්සේ කෙරෙන් ත්‍රිපිටකධම්මය අසා ඉගෙණ ශාසනාභිප්‍රසන්න විත්ත ඇතිව පරමවිදුබ ශ්‍රධාතිශ්‍ය භානියෙන් භානිගතක නම්වූ බුඩ්ධසේනාත්‍ර ප්‍රකරණයක් කරන්නාහු “ඥානං යසං සමසතවසතුච්ඡයං” යනාදි ලෙලාකයන් රචනාකලෝ.

Translation.

Sri Rāmachandrabbhārati, an illustrious Brāhmin, born of the family of (Kātya), learned in all the rich sciences of logic,

* This sentence conveys the idea that bees are inactive at night, and that their activity upon the absence of darkness is such, that it may be almost supposed that these children of darkness are in search of the night—their lost mother,

grammar, poetry, music, &c., having arrived in the beautiful Island of Lapká (Ceylon) from the treasury (seat) of all science (language) Gauda in the prosperous Jambuddwípa,* and having inquired and learnt the Tripiṭaka doctrines from the Reverend and Venerable Srī Ráhula Sthavirayo—Supreme Master of the Tripiṭaka doctrines and Principal of the temple Srī Sappabodhi Srī Wijayabáhu—and being (also) greatly pleased in mind (delighted) with the religion (or those doctrines), hath with supremely sincere and greatly devout faith paraphrased *Nānaṃ Yasya Samasta Wastu Wishayaṃ* † and other stanzas of the book composed by himself in praise of Buddha, and called *Bhaktiśatakaya*, “A Centum of Faith.”

(3) The third is what Europeans call “the bombastic” : and so great is the difference of taste between Europeans and the Singhalese on the subject of composition, that I had almost said the rules of English composition may be used with the rule of contraries to attain a good native style. The Singhalese regard the bombastic as the best ; and the following from the *Dēvadūta sūtra sanné* will serve as an example :—

පවුරු පදනම් දෙරටු අවම වාසල් ගෝසුර හිමල් සෙල්
විසල් තුල් පළහෙල ලකළ සුළුපා මහපා පෙළිනුදල සුවල
දළදළිනුදල කොපුලනින් වගළ නොමද මදසුවද පබඳ
කළ දළින් බමණ මත්බමරකැලන් කන්තලිනි දුරුකළ
ගුගුළු දලවලවලින් හා මහගු තුගු තුරග පෙළ අසුර බල
හළ පුවල මලමොල බළමුලින් සුන් සිවුරහසෙනහින් හා
සවිසිරි සපිරි පවර කුවෙරරද අලකපුර අසුරු නිවන්පත
ඉවත්කළ සැවන්සුර වෙත්ති දෙවිරම් වෙහෙර වැඩවසන
බුදුන් විසින් මහණුන් කැඳවා මෙසේ වදාරණලදි.

* *Gauda* stands for Calcutta, and *Jambuddwipa* for one of the four quarters of the globe, being the *terra cognita* of the Buddhists, a part of Asia. The *Tripiṭaka* doctrines embrace nearly the whole of Buddha's sermons.

† This is a part of the first stanza of the work called “*Baudha Satakya*,” one of the school books of the Singhalese.

At the temple called Jétawana, in the city of Səwət [like unto the city of Alaka, the seat of the powerful king Kuwera],* full of prosperity, teeming with the wealthy and possessed of armies composed of soldiers (foot), horsemen, elephant-men (cavalry), and cars containing men (artillery); numbers of brave and intrepid troops able to withstand the demi-gods; beautiful fleet horses; splendid elephants with huge double teeth, and which with their spreading ears remove swarms of bees that hover over them, invited by the tempting odour of the matter which greatly oozes from their (elephants') cheeks; splendid rows of beautiful white spacious squares of sizes (small and large); hills as large as the Himálayas; and gates, entrances, porticos, towers, batteries, and fortresses (at the aforesaid temple of the aforesaid city)—did Buddha, presiding, speak as follows to the summoned priesthood.

Besides the above division of prose compositions into the "simple" or "common," the "elegant," and the "refined," they are susceptible of another classification into the "pure" and the "mixed." The first comprehends the pure native Sīḥalese, and the second a style compounded of Sanskrit and Páli words derived into the Sīḥalese. Of the first species the first and the third sentences above extracted are examples; of the second, the second from the *Bauddha Śatakaya* is a specimen.

Turn we next to the poetry of the Sīḥalese, a department of literature cultivated to great perfection, if perfection could indeed be attained in any human performance. That the Sīḥalese poets have over-excelled the great and celebrated Indian authors is perhaps not true; but that there are a few Sīḥalese works which equal in merit

* Kuwera, in the Indian Mythology, stands for the Grecian Plutus. He is the lord of wealth and master of nine inestimable treasures. His city, called Alaka, is situated on Mount Kailása, and inhabited by Yakḥbó, demi-gods.

some at least of the Sanskrit works, I shall venture to assert. The *Selalihini-sandésé* of Srí Ráhula Sthavíra, mentioned above, may indeed be cited as one which is by no means inferior in point of imagery to the celebrated "Meghadúta" of Kálidása, translated into English by Mr. Wilson in 1813.* But I must not omit to mention that, unlike the Sanskrit, which can be procured from India, the

* කතවිශාමා සිව්වර දශකා පසවිචිත්තාධරොක්ඛී
 මධොක්කාමාවතිකහරි-භිච්ඡෙක්ක-භනිමන නාමි:
 ප්‍රො-භිච්ඡාරදලසගමනා සොනාකනමුත්තනාමාං
 යානමුත්තාදුත්තිවිචිත්තෙ සෘජිවරදොව ධාතු.

The above is from the "Meghadúta," p. 88, and the following, from Mr. Wilson's beautiful translation, with his notes, will give the English reader a faint idea of the writings referred to in the text:—

—————"a beauteous creature stands,
The first best work of the Creator's hands;
 Whose slender limbs inadequately bear
 A full-orbed bosom and a weight of care;
 Whose teeth like pearls, whose lips like *bimbas* show,
 And fawn-like eyes, still tremble as they glow," &c.

NOTE.—"The first best work of the Creator's hands," literally the first creation of Bráhma, and "first" may refer to time or to degree; it most probably here means "best." So Milton speaking of Eve—

"Oh! fairest of creation, last and best
 Of all God's works."—*Paradise Lost*.

"We now enter upon perhaps the most pleasing part of this elegant little poem—the description of the Yakshá's wife. I may perhaps come under the denomination of those who, according to the illiberal and arrogant criticism of such a writer as a Mr. Pinkerton, prove 'that the climate of India, while it inflames the imagination impairs the judgment,' when, standing in very little awe of such a poetical censor, I advance an opinion, that we have few specimens either in classical or modern poetry of more genuine tenderness or delicate feeling."—*Wilson*.

Sinhalese or EĻu works are few in number; and this arises from the grievous loss which they have sustained from the invasions of this Island by the Malabars, and from the general destruction of literary records during several reigns. At least, it is difficult to account for the share of civilisation possessed by the Sinhalese prior to the age of Vídágamá and Totāgamuwa, much less for the great talent and learned research displayed by those *literati*, without supposing that many valuable manuscripts which once existed are now lost. But, however few their works, the Sinhalese have sufficient to prove that they do not deserve to be disparagingly spoken of by Europeans—the majority of whom, whatever may be said of their superior powers of intellect, can never appreciate those beauties of native style which one thoroughly acquainted with the native idiom, the genius of the language, and the religion of the Sinhalese, finds in the EĻu works. The Sinhalese scholar finds, indeed, in the writings of his country's poets the unmatched sublimity of a Milton, the flowing gracefulness of a Pope, and the sparkling wit of a Goldsmith. Of course the English reader must understand the comparison here instituted with reference to the idiom of expression and the genius of the language, the habits of nationality, and the peculiarities of the religion of each class of writers. Perhaps it is difficult for an European, accustomed from his infancy to the peculiar expressions of his language, the numbers of his poetry, and the national and religious feelings which they convey (all which dispose his ear and bias his judgment to give preference to his own language), to understand what is here attempted to be shown—the existence in the Sinhalese of works which may be compared to those of England, *from the sameness of the effect which they severally produce upon the minds of the two classes of readers*. Perhaps also, for the same reason, a native is

incompetent to form a correct opinion on this subject.* Be this as it may, it cannot but be admitted that in the mind's eye of one who can enter into the spirit of both the languages, the Eḷu is not a language which should disparagingly be spoken of.

Apart from the mere beauties of composition (which can only be appreciated by an intimate acquaintance with a language), I have occasionally found in the Sinhalese books, as in all Oriental literature, a vein of thought exactly similar to that of the Western writers. Who, for instance, could read the following from *Subhāsité* of Alagiawanna Mohoṭṭāla and would not be struck with the sameness of idea, if not the exactness of their symbols?

* The writer once explained Goldsmith's beautiful lines "On the death of a mad dog" to several of the most intelligent Sinhalese scholars of the present day, and instead of hearing from them what Mrs. Barbauld thought of "this specimen of Goldsmith's poetical powers," that it "was wonderfully pathetic, and that it was sweet as music and polished like a gem," the writer was told by the Pundits that they could not perceive the wit of being informed by a poet "that his song could not hold them long, if they found it *wondrous short*."

In like manner, the English reader will indeed fail to perceive the gay and smiling imagery, and the smooth and flowing numbers of the two following stanzas, the last composed under the circumstances which I shall here briefly detail. A native poet, who was rather deficient in personal beauty, conceived an attachment to a lady of great attractions. A marriage was proposed, but was not concluded for some time. About this time one of his friends, wishing to rouse the dormant powers of the enamoured bard, sent him an extract of the following lines from the "*Kusajātakó*," wherein the beautiful princess Pábbāweti, indignant at the deformity of her husband, King Kusa, is said to have exclaimed at the eve of her separation from her royal consort :—

සමෙක් විසුළුව ඉ	ඈ
පනානම් රුපිරැකි ල	ඈ
ඉවැඩිම මිස කොම	ඈ
වැඩක් වුයේ ඔහුට කිකල	ඈ

On Criticism.

“One Science only will one genius fit.”

“ලොවින් එකෙක් එකදේකට වෙයි සමන.”

I need not remind the reader, however, that to render the English literally into the Sinhalese is difficult, if not impossible. And the absence of the same pithy expressions in both the languages, and the difference of idiom between the two, must necessarily render a literal translation little less than ridiculous. But if the well-conceived and understood idea of an English sentence be conveyed in the Sinhalese suited to the peculiarities to which I have already alluded, the translation thus made will serve the purposes of a literal one. Of this the following from Goldsmith

“If one were deformed, and yet longed for a beautiful woman, when did any good result to him, but inordinate ill!”

To the above the poet's answer was not only pert, but what was more (to use the words of Mrs. Barbauld), “it was wonderfully pathetic—sweet as music, and polished like a gem.” He knew that this was a biting sarcasm upon himself, and therefore was sarcastic in return without being offensive. He appealed to the sequel of the very “Kusa-jātaka” to prove the illiberality of a sentiment expressed in the heat of anger; and referring to Pábāweti, who afterwards *ex necessitate* and voluntarily adored her previously-loathsome husband, and also to the alleged circumstance that their reunion resulted in the loss of the king's deformity by the power of a miracle, the poet answered:—

එකි බස බොරු	වි ස
එකිමි අදහස සිදු	වි ස
සලි ඉසුරුමත්	වි ස
එද් දඹදිව මතුල්ගෙය	වි ස

“That dictum was incorrect; for the lover consummated his wish and attained prosperity, and Dambadiwa did on that day present the appearance of a festive house.”

(one of the exercises of the writer) will serve as an example:—

On Woman.

When lovely woman stoops to folly,
And finds too late that men betray;
What charms can soothe her melancholy
What arts can wash her guilt away?

රුසිරු ලිය ක් සලෙළන් පියෙවට අ සුව
නැවත කල ක් ගොස් දනගණ් ඉන් ප සුව
පැමිනි එළු ක් තමගට වරදින් මු සුව
කුමන දෙය ක් කර සිත කරණිද සුව

The only art her guilt to cover,
To hide her shame from every eye,
To give repentance to her lover,
And wring his bosom—is to die.

වර ද සමග ඇගෙලස්න වැසීම ට
තව ද විපිළිසරවීමට හිමියා ට
නොඉ ද ලොවේ නෙදනන් සියැස හමුව ට
වෙන ද ඇති කරුණ මියයාමය ඇ ට

Whilst on the subject of translations, it is perhaps not amiss to introduce into these pages one or two remarks upon the subject of *the translated Holy Scriptures*. It indeed behoves everyone who feels assured that the religion of the Bible will, in process of time, become the universal faith of the Ceylonese, to have the Scriptures translated into correct idiomatic Sinhalese, so that this Book of Books may prove to the Sinhalese scholar what the English version is to the English,—in the words of Dr. Lowth, “the best standard of the English language.” That any of the Sinhalese versions now extant are as correct as they can or ought to be, I am not prepared to say. Nor, if called upon to pronounce an opinion with reference to the style adopted, can I much hesitate to decide in favour of the old version in preference

to the so-called “Kotté version.” I shall not, however, here pause to consider the disputed question regarding the pronouns කෝ (*tó*) and ඔබවහන්සේ (*obamahansé*); nor indeed do I blame the pious and learned gentlemen who introduced the innovation, believing as I do that they were actuated with the best of intentions. But that the simplicity so much studied by the new translators after “an elegant English style” is opposed to the genius of the Sinhalese language, I trust I have already shown by exhibiting the difference between English and Sinhalese compositions. I admit that long parenthetical clauses and laboured periods should, if possible, be avoided in the translation of the Scriptures, and that clearness of expression should be the first endeavour of any writer or translator. But I do indeed object to one or more concurrent ideas which can be well and elegantly expressed in one continuous sentence being broken into two or three periods, either in writing in, or translating into, the Sinhalese.

I shall here extract a few paragraphs from a paper written by me some time ago :—

It will be perceived that in the English version the first three verses of our Lord’s Sermon on the Mount (St. Matt. v. 1–4) comprise one period :

1. And seeing the multitudes, he went up into a mountain : and when he was sat, his disciples came unto him :
2. And he opened his mouth, and taught them, saying,
3. Blessed are the poor in spirit, for theirs’ is the kingdom of heaven.

The Kotté translators have divided the above into four complete sentences ; and that, too, in a language whose very elegance consists in the introduction of as much matter as one can into one continuous sentence.

- 1 { පසුව ඔහු සමූහය දක කැඳකට නැගී එහි ඉදගනනය
 { ඔහුගේ ගෝලයෝ ඔහු ලඟට ආවාය.

2. එකල ඔහු සැබිඳේ නගා මෙසේ ඉගැන්වුවාය, ඒනම් :—
 3. සිහින් දිලිඳුන්ට සෙරිණ්ණය අසිතිනිසා ඔවුන් ආසිච්ඡාද
 ලත්තෝය.

Such a style, especially in the Bible, is calculated speedily to impoverish the Sinhalese as a language, and is unfit for any composition above juvenile books or little tales for children.

* * * * *

Without omitting any of the words above given, the following would be preferable :—

1. සමූහය දැක ඔහු කන්දට නැගී එහි ඉදහන්තාසින් පසු ඔහුගේ ගෝල
 ගේ ඔහු ලඟට ආකල 2. සැබිඳේ නගා ඔහු මෙසේ ඉගැන්වුවාය.

ඒනම් :—3. දිලිඳුන්ට සෙරිණ්ණය අසිති නිසා ඔවුන් ආසිච්ඡාදලත්තෝය

* * * * *

Nor, as far as we can be guided by the English version, does the above appear to us to be a correct translation. පසුව has no equivalent in English. සමූහය is singular, and not “multitudes.” සමූහයා දැක in the old version is preferable to the above, though rendering the English literally it should be සමූහයන් දැක. “When he sat” conveys “*after* he was sat”: and the Evangelist evidently wishes us to understand the period of time when the disciples came—“when he was sat, the disciples came unto him.” The Kótté version, however, does not give one an idea as to *when* the disciples came. According to the distinctly separate periods into which the above passage is rendered in Sinhalese, it is perhaps not unreasonable to suppose that the disciples came unto Our Lord *before* he was sat. ලඟට is “near”; but “unto” required වෙත. A person may come *unto* one, and yet not come *near* him. ආවාය for the third person plural is ungrammatical: it should be ආවෝය. Here we find a change of expression by the translators, who, in the controversy regarding *tó* and *obawahansé*, object to වනන්සේ, upon the plausible ground of a violation of the prohibition solemnly given in Revelations xxii. “Opened his mouth” is rendered සැබිඳේ නගා, which means “tuned” or “sounded.” To such an expression we do not positively object; but සැබිඳේ නගා is incorrect: it should be සැබිඳි නගා. But wherefore change the English expression, which is in the Oriental idiom, and foreign to the

accuracy of the sentence before me—දහම්, නරදම්සැරිනුච්ඡිත් දෙසිනි—"The doctrines were preached by Buddha." But not, as the Sinhalese of the first verse in Genesis above given, නරදම් සැරිනුච්ඡිත් දහම් දෙසුවාය.

The words දෙවියන් විසින් මැව්වාය, "created by God," are ungrammatical, and therefore incorrect. If the translators were conversant with the Sinhalese language, they would not only have shortened the sentence by the omission of the preposition විසින්, but would also have rendered the English sentence literally, and word for word into idiomatic and grammatical Sinhalese. The word විසින් requires a passive termination in the verb මැව්නි, as in the example already quoted from the "Sidat Sanggārawa"—දහම් නරදම්සැරිනු විසින් දෙසිනි. * * *

That is to say, the expression "God created the heaven and the earth" is at present translated "By God the heaven and the earth created," instead of "By God the heaven and the earth were created."

* * * *

To return, however, to the subject from which we have digressed. The Sinhalese books abound in pastorals and descriptive poetry, which are divided into many (nearly thirty-five) heads, all which comprise the several species of poetry known to the English. Besides the legitimate Sinhalese poetry there is a species called the එළු ශ්ලෝක (*Elu ślōka*), of comparatively modern introduction.

The last-named follows the rules of Sanskrit Prosody, and is written in a variety of measures with which that beautiful language abounds: it will suffice to give two examples:—

No. 1.—*On Night.*

සඳකැන්මි සඳකන් උර බොහු බලා රැවුදිගැස් සිත්තෙසින්
කොඳදන්පා හසිමිත්තමස්ගමගුරන්සොල්වාසපත්වත්සෙදින්
සැබැස්සත්මිණ රත්වලා රතඹරත් ගන්මින්දුවත් ඇ ලී
තුරුරැස් මිබිඳු වන් ඉසිහිරිදි තුන්වන් දුමු සේකර.

When the nocturnal spirit, seeing the goddess of the evening sip the honey of the moonbeams, fastly and indignantly approached (the latter) exposing with her mirth her flowery teeth, and waving the iron staff of night; the evening fled indeed with her scarlet jewel of a sun, and the crimson mantle of a scarlet cloud: the remnants which she left behind—a silver salver and the honey-drops which it scattered—illumined into the moon and the spangled stars.

The above selection from the *Gangārōhané* is composed in the *Mattebhavikrīḍita* tune,* and comprises :—



anapaest, a dactyl, cretic, tribrach, molossus, bacchic, short and long.

No. 2.

The following, one of the concluding stanzas of a beautiful little poem, "A Critique," upon the work from which the last has been selected, is from the pen of a celebrated living author named *Miripenné*:—†

* The rule, which is the following :—

සහරත්මාලාලීතිප්‍රසාදයෙහි : මෙහෙයවිකිබිසං.

$$\cup \cup = \cup \cup - \cup - \cup \cup - - - \cup = -; \cup \text{ and } -$$

exemplifies itself; "an anapæst, a dactyl, a cretic, a tribrach, a molossus, and a bacchic, ending with two letters, of which the last either long or *a*l, and with a pause at the end of the 13th syllable, compose the species called *Mattébhavikrīditam*."

† This talented and venerable priest is a resident of the Galle district. As a Singhalese poet he is unrivalled at the present day. Some of his earlier productions, quite of a piece with Cowper's "John Gilpin," were burnt by the writer, as they were a source of great annoyance to an individual who was the hero of the tale. There are many persons, however, who had committed the whole poem to memory; and I believe it is by no means impossible still to reclaim it from the Destroying Angel of time. His miscellaneous writings comprise two volumes, and are a valuable addition to the Singhalese classics.

species, an equal number of sounds ; regarding a long sound or the syllable of an අල් sound as being equal to two short ; as in

සමනෑ ස් මුනිඳු පිරිනිවි වස පටන් ල ද
 දෙදහ ස් පසලොසක් අවිරුදු පිරුණුස ද
 දියගො ස් පැතිර බුවනෙකබුජ නිරිඳුස ද
 පිරිට ස් තුණෙහි සිරිලක රජබිසේල ද

Buduguna Alaṅkāré.

Upon the completion of 2015 years from the era of the death of the Omniscient Supreme Intelligent (Buddha) ; and three years since the installation into regal office, in prosperous Laṅkā, of King Buwaneka Báhu of worldly renown :—

— — — — — = 14 short and 2 long.
 — — — — — = 12 do. 3 do.
 — — — — — = 16 do. 1 do.
 — — — — — = 14 do. 2 do.

We must get $\left\{ \begin{array}{l} 14 + (2 \times 2) = 18 \\ 12 + (3 \times 2) = 18 \\ 16 + (1 \times 2) = 18 \\ 14 + (2 \times 2) = 18 \end{array} \right\}$ an equal number of sounds.*

It will be perceived from the above that a return of the same music in all the lines is not essential to Sinhalese poetry, although it would greatly add to the solemnity of compositions. The writer had been successful in this in the following elegy “To the memory of a friend” who lately met a watery grave :—

සි ත බැති මමිතුර එන මග බලමි න්න
 ස ත වෙත නොවනොර දුක සැප අත ල න්න
 අ ත රට ඔහු මර අසලදි වැලිපැ න්න
 ග ත මරු අපසොර නොදැකම අපෙ හි න්න

Whilst watching the return of the friend of my heart (and) inquiring from people after his health, the Angel of Death hath at Welipenna snatched him away by stealth, unmindful of our grief !

* To the Sinhalese is known poetry of different numbers but uniform in all the four lines. I almost think of this species the numbers of sounds or feet vary from two to twenty-eight.

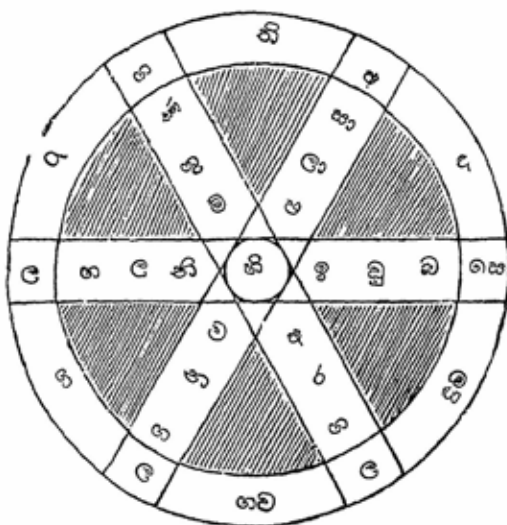
I have said that, except in one or two species of poetry, a stanza had an equal number of sounds in all the four lines. Of the exceptions the short common metre is one; but I cannot find any rule for its construction. From observation, I have however clearly ascertained that the first line consists of nine sounds, the second eleven, the third nine, and the fourth fourteen.

Example.

ගනගුමිනි අරගල
අසාලා එනි වනගල
සෙබඩුගුනි නිලගල
රහනි අදසෙම දුලච ගලගල.—*Kavminikoḍḍala.*

The peacocks with their mates in the mountainous forest hearing the din of tumultuous torrents, and glistening (with beauty), freely play about from hill to hill.

~~~~~; = 9  
~~~~~ = 11  
~~~~~ = 9  
~~~~~ -- = 14



Although out of place, I must not here omit to remark that the above stanza is so composed as to be used in the diagram without the repetition of eight of the letters found in all the lines.

Besides the above and the blank verse (of which I shall treat hereafter) there are three or four others, as far as I can remember, which have an inequality in the number of sounds or feet in the four lines of a stanza; and they are of a modern introduction—at least I suppose so, having only met with a few in two of the modern poets. Dunuvila Gajanáyaka Nilamé, and Kiraṁbé Terunnánsé have both adopted them in their works. They are very pleasing to the ear, besides being in one respect similar to the Latin, in that it is permitted in the latter to place the two syllables of a word in two lines—a license neither permitted in the English* nor so ‘ludicrous’ in the Sinhalese as it would seem if introduced into the former language. From *Kiraṁbé* :—

| | |
|--------------------------|-----------|
| කොමල සුපිපිසර සඳි | සා...පද |
| සු ග ල මලවිරද තුටුකර නොල | සා |
| නි ම ල කකකපල විල | සා...දිගු |
| ල ක ල ඇතිලිපෙල දිලි පදසර | සා |

* “Can anything give us a more ludicrous idea than the practice of the ancients in sometimes splitting a word at the end of the line and commencing the next line with the latter part of the word? This must have been nearly as ridiculous as the following English verses in imitation of this absurd practice:—

Pyrrhus, you tempt a danger high
When you would steal from angry li-
oness her cubs, and soon shall fly
inglorious;

For know the Romans, you shall find
By virtue more and generous kind-
ness than by force or fortune blind,
victorious.”—Walker.

Also : Gallicum Rhenum, horribilesque ultim-
osque Britannos.—*Catullus*, Od. 11, 12.
Labitur ripa, Jove non probante, ux-
orius amnis.—*Horace*, Od. 1, 2, 19.

The row of long beautiful toes like superb gold shells ornament the feet; and the two feet greatly pleasing to King Cupid, are like the full-blown soft lotus.

| | | |
|-----------|-------|------|
| — — — — — | — — — | = 14 |
| — — — — — | — — — | = 16 |
| — — — — — | — — — | = 14 |
| — — — — — | — — — | = 14 |

The following has one word split into two, whereas in the preceding the noun is only removed from its adjective.

හෙ ල මැලි සිව්මැලි කොම ලි...මිහි
 ප ල මිහිලොල්ලොබකල පුල්කම ලි
 දු ල සිරිකල් දිනු ලක ලි...සැම
 ක ල මුදුනන මල්කඩ මෙන් බැබ ලි

The fair princess, like the soft and delicate nymphæ lotus coveted as the full-blown lotus by the bee-like king; and who surpasses the beautiful Sirikata (Goddess of beauty)—has illumined the heads of all women like a garland of flowers.

To the last may be added, from *Dunuwila*, one other species, which has a sort of "catch-word" at the end of the first and third lines, which thereby are rendered unequal in number to the second and fourth.

Example.

එන වා කී බොරුවට කරස ත්තේ...ඉඳ
 පිණ වා සිත උත්සඳ එවැ ත්තේ
 දන වා හඳහිනිවිල නොනවැ ත්තේ...මගෙ
 යන වා දිවි නියමයි හිමිම ත්තේ

Having believed that thou would'st come, I was brimful of joy: (now that thou hast disappointed me) the very core (field) of my heart continually burns with fire; and on thy account shall my life cease.

| | | |
|-----------|-------|------|
| — — — — — | — — — | = 18 |
| — — — — — | — — — | = 16 |
| — — — — — | — — — | = 18 |
| — — — — — | — — — | = 16 |

"Blank verse," which is called *භි ග්*, though known to the Sinhalese,—as indeed it was the species of musical composition with which many nations commenced poetry in the early ages,—is not, however, in use now. Nor are there any correct books to ascertain the rules of its construction. The *Elu Chandasa*,* the only work of its kind, is found so incorrect, owing, probably, to the errors of ignorant copyists, that with the assistance of four copies procured from different parts of the Island, and with the living aid of two Sinhalese scholars, I have been unable to obtain the information I desire. But I may venture to state, that of *ග්* there are nearly fifteen species, differing in quantity from each other. The number of sounds do not, however, altogether exceed 44.† The following are examples :—

| | |
|--------------------|-----------|
| සරණ නඹර වරලස | = 10 |
| සෙවෙලවලකර දර්ශන | = 11 |
| රදුව පෙර කලවමන් | = 10 |
| කුසනිරිඳු නොසැමෙලේ | = 10 = 41 |

King Kusa forgot the indignities which had been previously offered to him by the princess upon her prayers at his lotus-like feet, covered (leaved) with her *sevel* ‡ like flowing hair.—*Kusa Jātaka*.

| | |
|---------------------|-----------|
| මහද ගඳකිළි කැරැ | = 9 |
| සවිනේ ගෙවා දත්තව | = 11 |
| දුහුනන් දැනුම් සඳහා | = 11 |
| කරණෙම් සිදත්සහර | = 11 = 42 |

* Since writing the above I have met with another work on versification, called *Svabhāsa Alaṅkāraya*, from which it will be perceived that I have already presented the reader with a specimen in a previous note. It is supposed to be a translation into the Sinhalese of a Sanskrit work called *Dandīya Alaṅkāraya*.

† We ought not to omit another species of poetry called *සැහැලි* *seḥeli*, and compounded of "blank verse" and "rhymes," and which, perhaps, to avoid repetition, we may well consider hereafter (*vide infra*).

‡ The Sinhalese poets have frequently compared the flowing hair of a female to the floating masses in the water called *සෙවෙල* (*Vallisneria octandra*), the *Elu* form of *සෙවෙල* in Sanskrit.

Having made my heart the residence for him who knew the end of all things, I compose the “*Sidat Saṅgarāva*,” in order that the ignorant may be instructed.—*Sidat Saṅgarāva*.

| | |
|-----------------------|-----------|
| පැලඹි කල්පහස | = 9 |
| බඹලොවිනා මහත් හුදු | = 11 |
| පිරිහුනු හා රජනෙන් | = 11 |
| අත් දනනකුරු හා කෙවදන් | = 13 = 44 |

Even the great beings who came from the Brahama world have, enticed by the allurements of love, lost all the prosperity of kingdoms : how much more then (can we say of) other people like unto little tender plants ?—*EĻu Chandasa*.

Although I have given the above in four lines, each verse is properly written in two. Thus :—

බලනෙක්දෙස් විලස් නිදසිඳු වත් වණනනත් ||
 පබවතු නෙවිලස් හා පවසමිඳුසි මේවි—
 ඇඳ රුසිරු සරණතල තඹර නියරැස්නෙන් ||
 සිනා ගනෙවි තඹරට සියහ මුහුලස පානා—
 ඇඳ මනදහ දහ දුවන් විමනැත් වදනා ||
 විශෝවගට දුලු කල් යුවල වැටුස් පුවල හල—

(They said) Indra alone could (with his thousand eyes) behold, and Ananteya (with his thousand mouths) alone could expatiate upon even a portion of Pabawatu's deportment. If we attempt to describe it, we should say the lotuses of her lovely feet, by means of their charms, the nails, constantly laugh at the lotus of her hair, whilst her lovely slender calves emulate the proud (light) of the two lamps lit for the Cupid who entered the habitation of her body.—*Kawsilumina*.

There is also a species of poetical composition (similar to the English “ballads” of a former day) called විරිදු *viridu*, which is sung at festivals and other places of rejoicing, without preparation or previous reflection, and upon a subject selected, often suggested, at the spur of the moment. Of this the following, from *Munkoṭṭumérāla*, one of the attendants of the late Kandyan Minister Pilimé Talāwa, and the

autumn: pray kindly send me a correct book answering to the first four letters of this stanza.

The following from the *Kāviyasékaré* is a specimen of a stanza containing the same word repeated several times, but conveying at each repetition a different meaning:—

- | | |
|--------------------------|-------|
| (1) මලිතිය බොන මවන පුළු | ම ව න |
| (2) පිපි තුඟුවන මවනවන | ම ව න |
| (3) හඬිනිඳුරණ මවන වන | ම ව න |
| (4) රණපුත්ත වැකි මවන බිල | ම ව න |

- (1) The paroquet which extracts honey from the sweets of flowers ;
- (2) The bees which enter the widespread lofty *mī* forest ;
- (3) The wild buffalo which destroys the ground and the forest by its horns ;
- (4) The rats daubed with glittering chalk (plumbago) which enter the holes of trees.

Carrying the last plan a little further, the author of the *Kavminikonḍala* has given us one line, which when repeated four times conveys four several meanings:—

- (1) වනකදල දෙලෙහුදල
- (2) වනකදල දෙලෙහුදල
- (3) වනකදල දෙලෙහුදල
- (4) වනකදල දෙලෙහුදල

- (1) The jungle trees became bright with the tender foliage ;
- (2) The forest became bright by reason of the assemblage of plantain trees ;
- (3) The eloped wife glistened with (her) streaming tears ;
- (4) The jungle was bent with (the weight of) the dew upon the tender leaves.

The same elegant writer has given us several puns of this kind, of which the reader will observe the following stanza, consisting of ten letters in each line, when divided into two may be read without the second half, by supplying

its place with the first half read from the last letter ; or from the end to the beginning and from the beginning to the end, as in the English word *Glenelg*.

| | | |
|------------|--------|-----|
| සරනිපිපි : | පිපිනි | ර ස |
| සරහලද : | දලහ | ර ස |
| සරදලපි : | පිලද | ර ස |
| සරලදස : | සදල | ර ස |

- (1) The lotus (*Nelumbium speciosum*) reared in the water of the river was opened ;
- (2) The *kēndattā* (*Cuculus melano-leucas*)* obtained its great delight, the water ;
- (3) The noise of the birds that received the water echoed ;
- (4) The moon that emitted rays on all sides lost her brilliancy.

From the same writer, abounding in puns of different kinds, the following is selected as a specimen of a stanza

* A species of cuckoo, with a peculiarly plaintive cry. It is supposed by the Siphalese that this bird is "begging for water from the clouds, since it cannot satisfy its thirst otherwise than by swallowing drops of water in the air." Some suppose that it has a hole or defect in its beak or tongue which prevents it from sipping water. Mr. Wilson has the following note with reference to this bird at page 14 of the "Mégha Dúta":—

"The *Chataka* is a bird supposed to drink no water but rain-water ; of course he always makes a prominent figure in the description of wet and cloudy weather. Thus, in the rainy season of our author's 'Ratu-Sapharé,' or assemblage of seasons :—

නෑනාකුලෙඳවානක පැයින් කුලෙද,
ප්‍රසාදිනාසෙණාසතරවලමිනි.
ප්‍රසාදනිමඤ්ඤා නවවැරි බැරිණි
විලාසනා ශ්‍රොත්‍ර මනෝහරස්වනා.

The thirsty *Chataka* impatient eyes
The promised waters of the labouring skies,
Where heavy clouds, with low but pleasing song,
In slow procession murmuring move along."

In the translated "*Amarakósha*" it appears that the *Chataka* is a bird not yet well known, but that it is possibly the same as the *Pipha*, a kind of cuckoo (*Cuculus radiatus*).

composed of two letters in the alphabet, and in which are incorporated all the vowel sounds :—

| | |
|----------------|-----|
| නෙවන විවන | ව න |
| නව විනා වන නී | ව න |
| වන නොනිවි නුනු | ව න |
| නානනානව නිවුනේ | ව න |

Birds of divers colours entered the forest ; the *ná* (*Mesua Ferrea*) and *bakmí* (*Nauclea orientalis*) became fresh (with foliage) ; the unwise eloped wives have received no consolation ; (and) the forests became rivers to the bathing elephants.

Illustrative of the decorations of style which the Sinhalese poets make their study, I may also mention the existence in their compositions of what may be termed rhymes in the middle of a stanza. This is very common except in short metre. Of this species the following will serve as an example :—

| | |
|--------------------------------|-----|
| වැඩිවෙ න ලෙසා දෙන දන පමණට ස | ත ර |
| දෙන ද න නී සා දනරස ලැබ නොව වි | ත ර |
| පසු වෙ න දී සා නාසක මැනිදුනි ප | ත ර |
| ඉද ද න ග සා ජන ලෙස අසදිමි නී | ත ර |

O Chief (Mudaliyár) Disánáyaka ! unbounded in wealth by reason of your valuable charities ! just as the increase of learning in proportion to its impartation to others ; on my bended knees do I constantly pray that you will visit us.

The two following verses may be read in one diagram of uniform construction by the omission of sixteen letters :—

- * (1) ලද ලල දවල උ ළ ල
- (2) විසත ගත නිලිනි ළ ල
- (3) සරසිකැල නොලදී ළ ල
- (4) මෙලෙස දිය නෙකසෙ ළ ල

* The numbers have reference to the lines in the diagram on page 282.

- (1) The forest has received bright tender foliage.
- (2) The heavens (vacuum) became bright with blue rainy clouds.
- (3) The ponds have received their brightening (elements the) water.
- (4) The world (itself) thus greatly brightened.

(5) මෙදිවු සඳ පිවිස ස ල

(6) දිදිනු කැර රහන ස ල

(7) කරනි ලද පිලිවි ස ල

(8) ලසිකිලස පිලකි ස ල

The young peacocks delighted with the storm, and having ascended the nearest but large mountains, commenced to play about in divers (two) ways, by spreading their wings adorned (wet) with blue.

මතුරසුපාලයි.

| | | | | | | | | | | |
|---|----|---|----|----|---|----|----|----|---|----|
| 1 | ල | ද | ල | ල | ද | ව | ල | ල | ද | ල |
| | ස | ස | ස | ස | ස | ස | ස | ස | ස | ස |
| | ස | ස | ස | ස | ස | ස | ස | ස | ස | ස |
| 2 | පි | ස | න | ග | න | නි | ල | නු | ද | ල |
| | පි | ස | ර | ර | ස | ස | පි | ස | ස | පි |
| | ද | ස | ර | ර | ස | ස | ද | ස | ස | ද |
| 3 | ස | ර | පි | කැ | ල | කො | ල | දි | ද | ල |
| | වු | ස | පු | පු | ස | හි | හි | ස | ස | හි |
| | ද | ස | වු | වු | ස | ර | ර | ස | ස | ර |
| 4 | මෙ | ල | ස | දි | ස | කො | ක | සෙ | ද | ල |
| | 5 | | | 6 | | | 7 | | | 8 |

I cannot resist the temptation of presenting the reader with another diagram. It is the one in the annexed Plate

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list is as follows:

2. The second part of the document is a list of the names of the members of the committee who have been elected to the office of chairman and vice-chairman. The names are listed in alphabetical order, and the offices are listed below each name. The list is as follows:

3. The third part of the document is a list of the names of the members of the committee who have been elected to the office of secretary and treasurer. The names are listed in alphabetical order, and the offices are listed below each name. The list is as follows:

(see page 283*) by *Koratōṭa Terunnānsé*, who received a handsome reward from his sovereign, *Rājādhi Rājasiṅha*,* for the cleverness and ability with which he introduced into one diagram twelve well-meant elegant stanzas.

- I. { 1. සිසිසිසිදසල නිති නිති නිරප ලලල ල
 2. සිරිවිලදිසන වසවමුසිනද කුසක ල
 3. සිද්ධවග්ගිමන රහනගම්න පථනස ල
 4. සිරිගන නිරත නමදිමි නවන භුවන ල

(4) I bow to the great *Sirigana* (Buddha),† who abstained from idle praise (exaggeration); (3) who was firm, renowned,

* The writer has given his name and the date of his composition, &c., in the following stanzas. The *Saka* era (from the date of the reign of a king of that name) is much in use among Singhalese scholars. It commences 78 years after the Christian era.

ස ක වසිනෙක්දහස් සත්සිය දෙසිවු ව න
 ල ක සිරිපද දිරප සිහනිරිදුට ස ව න
 නි ක රජතුරු ගෝල දමිරම් සති රු ව න
 ස ක කෙලෙ මෙබර කවිගුප් නම් අමුතු ව න

Rev. Dhammārāma, the disciple of the Preceptor of three Sovereigns, hath composed this novel diagram embodying twelve stanzas, in the sixth year of the reign of *Rājādhi Rājasiṅha*, and in the year of *Saka* 1708 :—

මෙතිරි දු මෙසක නරඹා සිසසකිතිදු රු
 ගෙවිරි දු කිවිදු කල ගෙලෙ වන් පාසසු රු
 මෙනමු දු ලත් පල්ලේබැද්ද ගම්ව රු
 මෙසති දු ගට පිදි මිහි පවතිනා තු රු

This king, having with delight seen with his eyes this diagram, like unto a noose on the necks of his (the writer's) rival poets, has made an offering to this Chief Priest of an estate called *Pallébedda*, as long as the earth shall endure (in perpetuity).

† There are no less than twenty-six epithets for Buddha. They are embodied in the following six lines from the "*Nāmavaliya*" :—

බ්‍රහ්ම ගණක.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|---|--|---|--|--|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 6 | | | | | | | | | | | | | | | | 5 | | | | | | | | | | | | | | | | 4 | | | | | | | | | | | | | | | |
| 4 | | | | 3 | | | 2 | | 1 | 4 | | | | 3 | | | 2 | | 1 | 4 | | | | 3 | | | 2 | | 1 | | | | | | | | | | | | | | | | | | |
| 1 | ක | ක | ක | ක | උ | උ | ල | හි | හි | හි | හි | හි | ර | ර | ල | ල | ල | ල | ල | ල | ල | ල | ල | ල | ල | | | | | | | | | | | | | | | | | | | | | | |
| | ක | ර | ව | ව | උ | උ | හි | ව | උ | ව | ම | ක | හි | ර | ර | උ | උ | උ | උ | උ | උ | උ | උ | උ | උ | | | | | | | | | | | | | | | | | | | | | | |
| | ක | උ | ව | ව | හි | ම | හි | ර | හි | හි | ම | උ | හි | ව | ර | උ | උ | උ | උ | උ | උ | උ | උ | උ | උ | | | | | | | | | | | | | | | | | | | | | | |
| | ක | ර | හි | හි | හි | ර | හි | හි | ම | උ | ම | හි | ව | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | හි | උ | ර | උ | හි | ව | ව | හි | ර | හි | උ | ම | හි | ර | ර | උ | උ | උ | උ | උ | උ | උ | උ | උ | උ | | | | | | | | | | | | | | | | | | | | | | |
| | හි | ර | ම | හි | හි | හි | හි | ව | ක | ර | ව | හි | ම | හි | ර | උ | උ | උ | උ | උ | උ | උ | උ | උ | උ | | | | | | | | | | | | | | | | | | | | | | |
| | හි | හි | හි | උ | උ | ම | හි | හි | ර | ර | හි | ර | හි | හි | ර | උ | උ | උ | උ | උ | උ | උ | උ | උ | උ | | | | | | | | | | | | | | | | | | | | | | |
| | හි | ව | හි | හි | උ | උ | හි | ර | හි | ර | හි | ම | හි | ව | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | උ | උ | උ | උ | හි | ව | ව | හි | ව | හි | උ | හි | ව | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | |
| | උ | ර | ක | ක | ව | උ | ව | හි | ර | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | | |
| | උ | හි | හි | උ | හි | හි | ර | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | | |
| | උ | හි | හි | හි | හි | ර | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | හි | හි | හි | හි | හි | ර | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | | |
| | හි | ර | ක | ක | ව | උ | ව | හි | ර | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | | |
| | හි | හි | හි | උ | හි | හි | ර | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | | |
| | හි | හි | හි | හි | හි | ර | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | හි | | | | | | | | | | | | | | | | | | | | | | | |
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| 10 | | | | | | | | | | | | | | | | 11 | | | | | | | | | | | | | | | | 12 | | | | | | | | | | | | | | | |

and, like a precious gem, who extinguished the fire of metempsychosis; (2) who was the chief of the world, blessed with prosperity, who when king Kusa heard the lion's roar, who (by self-denial) extinguished in himself the allurements of sin and vice,—who was gentle (cold) as the moon, benevolent, the saviour of men, the ocean of river-like wisdom, and who destroyed the weakness of the heart by means thereof.

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| II. | 1. නවරදනවසසිරිපතලමනිමනර | ක |
| | 2. නරමනනතනවසුලවනමසුපසස | ක |
| | 3. නතසදදමනතලසනිරිසිරනදපි | ක |
| | 4. නවනුසනදපුරනරසුනමද්විනය | ක |

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| සමන සතර මරුපු මොකදුරු මුනි | උ |
| සමකාස් පසාස් දිසබ්ප දසබල දිනි | උ |
| සමන්බදුරු සිරිගත ලොවන සුගති | උ |
| නරදමසාරි විනා දමරද සුගත් ඩු | උ |
| තිලෝතුරු ලොවිදු සිදු සමන සිරිම | ත් |
| දිසතා තිලෝතා දින නමිසු සැමසුග | ත් |

(1) සමන, derived from සමීඤ (Sanskrit), means "allwise"; (2) සතර, from ගායනා (Sanskrit), means "master" or "teacher"; (3) මරුපු means "the enemy of Māra," a god inimical to Buddha; (4) මොකදුරු, from මොක් and දැදුරු, means "the teacher of Niwan"—the *summum bonum* of the Buddhist—the doctrine of the extinction or annihilation of the human soul; (5) මුනිදු, compounded of මුනි and දු, means "supreme intelligence"; (6) සමකාස් is the Eḷu expression of the Sanskrit සමනා වසු, "eyes on all sides"—omniscient; (7) පසාස්, "five eyes," having reference to the five powers of sight which his followers attribute to Buddha—they are, first, මසාස, which means මස්දාස, "bodily eye," the power whereof was so great that it is said he could see the distance of sixteen miles just as we can see at the distance of sixteen inches, and that it was composed of five colours; i.e., the eye-lids were blue, their sockets glossy yellow, their corners red, the whites of the eyes snowy white, and their black jet black; secondly, දිවදාස or දිවිදාස, "godly eye," which had the power of seeing that which the මසාස could not penetrate; thirdly, පැනාස or පැනාදාස, "eye of wisdom," which means in English "the mind's eye," capable of an insight into superlative wisdom; fourthly, බුදුදාස, "Buddha's eye," a sight which none possessed but those who became Buddha by predestination; and fifthly, සමනාස (*vide supra*), "omniscience"—(8) දිසබ්ප, from දිස and

(4) Bow ye to the peerless (Buddha) of golden rays, without pride and the evil propensities of humanity ; (3) whose face was like the moon, who had beauty which pleased all, and a voice like that of the Indian cuckoo ; (2) who was not covetous, was without a thirst for evil desires, unavaricious, five-eyed, and the emancipator of hell ; (1) who was blameless, precious as a gem, not led away by the allurements of royalty, and preserved the mind from vacillation.

| | | |
|------|----------------------------|---|
| III. | 1. ගතසද්දසනොස දගනුනදවනිදමන | ද |
| | 2. ගරුපිසුච්ඡවනරසනනවගනනම | ද |
| | 3. ගනනදනකලනපියසිහරනනපප | ද |
| | 4. ගගගනිරතියසසසනපරදදද | ද |

බප්, "father of the world"; (9) දසබල or දසබුල් means "of ten-fold power," having reference to the ten powers of the body and the ten powers of the mind which his followers attribute to Buddha; (10) දිනිද, from දින "to conquer" and ඉද්ද "supreme"—the supreme conqueror—which means the conqueror of *death* මර (the powers of the soul—පංචකාය, *vide* Clough's Dictionary; lust, anger, ignorance, self-confidence, and pride—කෙලස; merit and demerit—ඉභිසංකාර; and මාර, god of that name before explained); (11) සමන්බද්දරු or සමන්බග්දරු, from සමන්ත පද (Sanskrit), "good in every way"; (12) සිරිමත් (the word in the text), from ශ්‍රීසත් (Sanskrit) "full of prosperity"; (13) ලොවග, from ලොකග (Páli), means "chief of the world"; (14) සුගතිද has different meanings, one of which, according to its plain derivation, means "the chief who is gone to good (Nirvána)" from සු "good," ගත් "received," and ඉද්ද "chief"; (15) කරදම්පැරි, "men-converting driver," having reference to the facility with which he converted mankind to his doctrines, just as easily as a coachman leads his horse; (16) විහාර, a term as also used to one of the heathen gods *Ganadeviyó*, and means, when applied to Buddha, "the peerless," who has not his like—himself supreme; (17) දමරද, "king, by reason of his righteousness"; (18) සුගත් *vide* සුගතිද, without the adjunct ඉද්ද; (19) බුද්ද (it will exceed the bounds of this Paper to enter into a definition of this term, suffice it, however, to state that it means) "a pandit," "blossoming," or "awaking from sleep"; (20) නිලෝතුරු, "teacher of the three worlds"; (21) ලොවිද, "chief of the world"; (22) සිද්ධසම්ම, "all wisdom acquired by himself"; (23) සිරිමත්, "altogether a beautiful person"; (24) දිසංක, "chief of the world"; (25) නිලෝත්තර, "chief of the three worlds"; and (26) දින, "conqueror."

(4) Bow ye to the supreme Buddha, who was without lust, decrepitude and its concomitant ills, the donor of donors, the admiration of the good, who arrived at the goal of metempsychosis ; (3) who pleased the priesthood, was houseless, a stranger to distress ; (2) who was humble and agreeable, gave consolation to men, and procured *Nivana* ; (1) who was easily satiated, quick of perception, self-denying, renowned in the world, and (who moreover) granted Bráhma's prayer.

- IV. {
- | | |
|---------------------------|---|
| 1. ලලලලවිදසි කකකකතගතදදද | ද |
| 2. ලකසතදුරමරසපියබ්බිමනමප | ද |
| 3. ලසනවසදස නසදනසවනමතප | ද |
| 4. ලකුඵනුනිදිසමපනවිසකතදනන | ද |

(4) Bow ye to the feet of Buddha, who was a treasure of compassion, successful in profound meditation (that which brings its object fully and undisturbedly before the mind), and pleased all men ; (3) who was like the new brilliant moon, did not secretly sin, and gave *Nivana* ; (2) who loved not sinful men, and practically carried out his profound doctrines ; (1) who could dive with his into other's minds, and who cared " not a straw " ($2\frac{1}{2}$ gr.) for the impure human body which the ignorant regard as a banner.

- V. {
- | | |
|------------------------------|---|
| 1. නිමුගම්බමනනවනිසුදර්සිතනසි | ස |
| 2. නිවනදිසදදපලසරදනනිනුසස | ස |
| 3. නිසගමරහසිරිසුලනවදුවගරපි | ස |
| 4. නිවරනනිමදසිවනරනවසදනන | ස |

(4) Bow ye to him who had no impediment against seeing, was unintoxicated with vain-glory, the chief of *Nivana*, resident in forests, and who enjoyed the food of meditation ; (3) who was not enticed away by desires, was deserving of offerings, worthy of adoration, and had no lusts ; (2) who was the (victorious) banner of the world, who obtained the fruitful *Nivana*, enjoyed laudable prosperity, subjugated evil concupiscence and all improper desires, ceased to wander (in the regions of metempsychosis), was able to convert men, and was self-denying and omniscient.

- VI. { 1. සිලවනගනනදනදසතපනිදිසුද ග
 2. සිවබගනපුනරමසනුවද්‍රවසපින ග
 3. සිජිදිජයරසවරනවනදවතරුන ග
 4. සිසිසිසිනදනනනනනද්‍රවිදගග ග

(4) Bow ye to him who, at the foot of the *Bó* tree, by the subjugation of evil passions and lusts, attained pre-eminence, who sent many to *Nivana*, dried the springs of sin, and was in speech bold as a lion; (3) who was of young and tender body, and of superior mental and bodily accomplishments, who continued in moral merit, and destroyed the morbid appetites; (2) who was pre-eminent in merit and happiness, unattracted by the female sex, and peculiarly fit for *Nivana*; (1) who was steady and uniform in the observance of religious and moral obligations, and wishful of pleasing the priesthood; who acted up to the letter of his doctrines, and was a treasury of penance.

- VII. { 1. දදදදරජනසසසසනිරනගග ග
 2. දපපනනරගසිසපිනලකනදනන ග
 3. දමනනගවනනසරනවද්‍රවසුපිරු ග
 4. දනමදනිවදකනුගදසනොසදිසන ග

(4) Bow ye with pleasure to him who gave *Nivana* and consolation to people, had the speech of wisdom, and was the chief of the world; (3) who was very full of *telesadhutāṅga*,* who revealed to men the hidden treasures of morality, and did not annoy or distress any being; (2) who was the chief of men—humble, and dazzling with the resulting prosperity of hundreds of meritorious acts, and sinned not; (1) who was sinless, firm as Mahamétra, possessed of *chatussatya*†; and for whom love was begotten in the minds of wise Bráhmins.

* *Telesadhutāṅga* are thirteen religious ordinances to be observed by the priesthood, and which, with their minute subdivisions, are too numerous for detail here.

† *Chatussatya* are four articles of belief in Buddhism, and are the following:—A belief, 1st, in that certainty of sorrow; 2nd, that it proceeds from sensual desires; 3rd, that the subjugation of both is by *Nivana*; and 4th, in the means of obtaining that happy state.

- VIII. { 1. කසනවිදුමනසුරනරපුදනසනුව න
 2. කපිදතරුසිරිතිසලනනමදසන න
 3. කසසපසුමනවලසුවනනනමර න
 4. කරනමතිමලනපරිසිසවනදරව න

(4) Bow ye to Buddha, who was pure, and wishful of subjugating the passions and evil desires ; (3) who died to die no more, was without desires, fond of the forest, benevolent, and unqualified for the laity ; (2) who was robed, handsome, firm, and unintoxicated with vanity, and had tenfold-wisdom ; (1) who possessed six species of intelligence superior to that of all men, was infinite in wisdom, and obtained offerings from gods and men.

- IX. { 1. ලනවනුවනමිදිමනතරතිනගරි සි
 2. ලසනඵ පනමිගනගරනමභිවබ්දි සි
 3. ලකසකුදනසිමුවසවනගදිලවරි සි
 4. ලලලලජරතිතිතිතිලසදසිසිසි සි

(1) I bow unto him who had no affliction or sorrow, was wishful of redeeming others, was like unto a ship (which wafted men over the ocean of metempsychosis), and free from desire to sin ; (2) who was of glowing splendour, chief of the priesthood—had no delight in witnessing the fights of beasts and birds, and shunned the allurements of hell ; (3) who was the chief of science and of the fine arts, was least desirous of asking (so as to subject himself to ignominy) ; (4) who with his heart gauged the world—was a master mind, a store-house of wise designs (whereby and by reason of his ordinances men obtained *Nirvana*)—the chief of the wise, and the holiest of the holy.

- X. { 1. ගගගගදවිදු නනනනනදනසිසිසි සි
 2. ගතරුතවදනවතරවසරසරිදිරි සි
 3. ගතපිසවද්‍රවනුසමරනසුනගබව සි
 4. ගදසුදිතිපතසදනදනනනවල සි

(3) Bow ye (to Buddha) who will be born no more, the father of the priesthood ; (1) the chiefest of the chief—chief by reason of his moral and religious lectures—who extinguishes sorrow—attracted many to himself, whose smile played amidst the rays of

his white brilliant teeth ; (4) whose word was the theme of the wise, who was not idle, and the chief of men ; (2) whose word had a deep signification, whose voice was sweet, and whose prowess was great.

- XI. {
- | | |
|-----------------------------|----|
| 1. සනනදසවන රනවසිදමනිනරව | නි |
| 2. සපිරගවද්වනලසුරිසිහරමහස | නි |
| 3. සයසනුනිනද රසලපදදයදිනව | නි |
| 4. සසිනනසිරද සුනිවනනමදමිගමි | නි |

(2) Bow ye to him who was of a fully developed body—avoided Anageya's flowery charms, and was engaged in deep meditation regarding *Nivana* ; (1) who pleased all, resided in the country, was of six colours, peaceful, and actuated with righteous principles ; (4) was worthy of praise, had a fascinating speech—and gave to beggars without question ; (4) who was the chief of the *Sákiya* race, great and happy, well clad, worthy of adoration ; and who subjugated the passions.

- XII. {
- | | |
|----------------------------|---|
| 1. දනනදනකස විනපමයදිනිනුඵකු | ල |
| 2. දපනමනවස නදසනසෙදසවනස | ල |
| 3. දපමනමද බියපිසරමරද්වනසක | ල |
| 4. දදදදනගන කකකකසිදවිලලල | ල |

(1) Bow ye to him who was the delight of men, and devoid of vicious inclinations, was born of an illustrious race, who enjoyed in meditation the fruits of *Nivana* ; (2) which men procured as soon as his words reached their ears ; (3) (bow ye him) who was moderate in speech, who swept away all fear, and frightened the three daughters of *Mára* ; (4) who was like unto a banner, who raised the banner of victory in all his actions, who had an insight into things in the earth, the air, and the water ; who was resplendent, and was (moreover) pure at heart.*

* The above, although a free translation, made with the assistance of several commentaries, is nevertheless—being confined to each line, and therefore without any attempt at arrangement—less elegant than it should otherwise prove. The governing words of each sentence “Bow ye” or “I bow” will be found placed at the beginning of each line with which the writer has commenced the translation.

There is also another species of pun called සුවල *suvala*, or "double-meaning verse," much esteemed by the Sinhalese. It is to be found, though sparingly, in several of the best authors. In the *Kāvyaśékaré* we find the following :—

| | |
|---------------------|----|
| නත්වරද ලොප් | වන |
| කිරියඳිසර සත් | වන |
| අදෙස් හැදිලි | වන |
| එසඳ ගුණයෙන් සදලකුණු | වන |

Free from many faults—

1. ලොප්වන.....නත්.....වරද
possessed of previous (ly obtained or done) merit (and) intelligence,
2. වන.....කිරියඳිසර.....සත්
imbued with faith.
3. අදෙස්.....හැදිලිවන
Woman, by reason of those qualities, is like "grammar."*
4. එසඳ.....ගුණයෙන්.....වන.....සදලකුණු

This comparison is explained by the same stanza conveying different ideas, as follows :—

It is by reason of (the following) properties that

4. වන.....ගුණයෙන්.....
she is like the symbols of sound :
එසඳ.....සදලකුණු

that is to say—

1. "Nat" and "varada" are produced by elision.†
නත්.....වරද.....වන.....ලොප්
2. The verb is the seventh section.‡

* The word here rendered "grammar" is in the Sinhalese a compound term, which means the "symbols of sound" (*sadalakunu*).

† As *නත්* and *වරද* are produced by the elision or lopping of *අනත්* and *සුවරද*, so woman, according to the first translation, was shown to be *blameless*, lopped of all her faults.

‡ The verb which is the subject of the seventh section of the grammar conveys an act, as in the agency which is indicated by previously done or obtained merit.

කිරිය.....වන.....සත්.....අදියර

3. The word “hēdahili” is produced by substitution.*

හැද හිලිවන.....අදෙස්

The above conveys both a rule of grammar and an eulogium upon the female sex. In either sense it is grammatically correct, in both senses it is elegant, and in neither is it defective in imagery.

These lines afford us an opportunity to ascertain the date of the “Sidatsangarāva.” For although many a Sinhalese scholar believes that the grammarian who professes to write his work upon the precepts of “unerring custom” after the established usage of eminent writers, has borrowed most of his illustrations—such as *වත්* or *අවත්*—from the *Kāviyaśeṅkaré*, yet I think, apart from the modernism of the style of the last-mentioned work,—a fact which sufficiently refutes the above opinion,—there is almost conclusive evidence to support the more generally prevailing belief that “the last-mentioned work was in point of date subsequent to that of the grammar.” I say there is nearly conclusive evidence, because the poet, in reference to the verb in the stanza under consideration, places it in the seventh section or chapter of grammar—a division which, as far as my inquiries have extended, is to be found in no other work on grammar except the “Sidatsangarāva.” Taking then, the date of the grammar to have been before the *Kāviyaśeṅkaré*, we are by no means at a loss to say that it was written after the *Kavsiḷumana*, from which the grammarian has quoted the following passage :—

නරනිළුනු ඉංගෙන් සෙමෙනද නැසිපැසැනි.

She came slowly, according to the king's wish, and hid herself aside, &c.

* As by *ades* (a term of grammar for giving possession to one sound a different one) *අදෙහිලි* becomes *හැදෙහිලි*, so the naturally unbelieving sinful woman was imbued with faith.

Kamsilūmina was written by Kalikāla Sahitya Sarawajayna, or King Paṇḍita Parākrama Báhu III., who flourished A.D. 1266, and the *Kāviyaséharé* was composed by Toṭagamuwé in the 34th year of the reign of Parākrama Báhu VI., who ascended the throne A.D. 1410.

Between these two dates, therefore, was the “*Sidatsangaráva*” composed. But we are still unable to state at what precise period of time (during an interval which covers a space of 178 years) it was published.

Extending, however, our investigations a little farther, it may not prove to be an idle theory, nor one inconsistent with that which we have just propounded, to identify *Patirāja*, to whom allusion is made at the conclusion of the “*Sidatsangaráva*,” with the *Wírasingha Patirāja* mentioned in the introduction to the “*Pansiyapanas Játakaya*.” The grammarian, in a sort of dedicatory address with which he concludes, says :—

“May *Patirāja*, like unto a banner on the summit of the mansion-like village Radula, and who by the arm of his extensive ramparts governs the whole of the southern (division of) *Lapká*, be long prosperous ! I have composed the ‘*Sidatsangaráva*’ at his kind request, and with a view to disseminate (the knowledge of) the rudiments of cases, &c., in the native (Sinhalese) language. The wise man, who shall have learnt its rules both primary and secondary, and shall have made grammar his study—having with facility removed the pretensions of the learned, who are elated with pride—will constantly hoist up the flag of victory in (this land of) *Lapká*, like the boundless ocean with the renown of its waves widespread in all directions.”

Patirāja was not a king, but a chieftain in the south of Ceylon, “who by the arm of his extensive ramparts governed Southern *Lapká*,” and “at whose request this grammar was composed.” Nor is it consistent with the known history of

this Island to regard him as a king of Ceylon; nor indeed is he named by the grammarian with a dignified expression such as to justify a like supposition. And that he was a minister of the ruling sovereign, and clothed with the authority of a petty governor, we may without difficulty believe, since we have numerous instances of the kind in the “Mahāvamsa.”

Having thus far arrived in the chain of our investigations, the question presents itself, When did Patirāja flourish? We can only obtain an answer to this in case his identity with Wírasinpha Patirāja, “the supreme minister” named in the following extract, be established:—

“It is well that good people, having given their ears and bent their minds, should hear the EĻu version of the History of the Lives, composed without departing from the method of the writer of Atuwá, and with the assistance of the Supreme Minister Wírasinpha Patirāja, and at the request of the good Minister Parákrama, who commended the translation into the EĻu of the lectures called ‘The Five Hundred and Fifty Lives,’” &c.—*Introduction.*

The like laudable exertions in either case bestowed by the minister in the promotion of native literature, besides the similarity of name given to the chieftain mentioned in each of the above selections, prove the identity of the patron under whose auspices the “Pansiyapanas Játakaya” was translated into EĻu, with the provincial chieftain who directed the publication of the EĻu Grammar. Taking their identity to be thus established, we are enabled—with the assistance of a tradition current in this Island, and supported by evidence as to its truth, that the “Pansiyapanas Játakaya” was translated during the reign of a king of the name of Parákrama Báhu, who had *Hastisalapura* (Kurunégala) for the seat of government—to ascertain as nearly as possible the date of the “Sidatsangaráva,” by fixing upon Paṇḍita Parákrama Báhu IV. (A.D. 1300—1347),

the only king of that name who had his court at Kurunégala.*

There are many other *Yuvala* verses in several books ; but it will suffice to make one more selection from the *Yógaratnákara*—a book no less celebrated for its doctrines on medicine than esteemed for the elegance of its versification:—

| | |
|-----------------------|---|
| පිහිටි ගුණ තිරස | ර |
| කළ සම්බුද්ධන් පිරිව | ර |
| විහිදි රස් මනහ | ර |
| වදිම් පිරිගණසුතර හැමව | ර |

First translation, taking the subject of the stanza as *Buddha*:—

Always do I bow to the Mahámera-like Buddha, who
 හැමවර...වදිම්.....සුතර.....පිරිගණ
 surrounded by all castes and races—
 පිරිවරකළ.....සම්.....බුද්ධන්
 emitting lovely rays—
 විහිදි...මනහර...රස්
 possessed unchangeable fruitful virtues.
 පිහිටි.....තිර.....සර...ගුණ

Second translation, taking the subject of the stanza as the *Mahámera*:—

Always do I bow to the Buddha-like Mahámera, who†
 හැමවර.....වදිම්.....සුතර.....පිරිගණ
 encircled by all hills and rocks—
 පිරිවරකළ.....සම්.....බුද්ධන්

* The following remarks from the learned translator of the "Mahavamsa" support the above theory:—"Paṇḍita Parákrama Báhu IV. (Kurunégala, A.D. 1319-1347).—Relationship not stated; devoted his time exclusively to religious observances, and to the building and establishing sacred edifices at Kurunégala. Many religious and historical works, among them the 'Mahavamsa,' were compiled under his auspices."—*Turnour*.

† This is used in the masculine gender; and it is not a little remarkable that the Eḷu has not the neuter, although it is known to most of the Oriental languages.

resplendent with pleasing lustre—

විච්ඡි.....මනහර...යස්

has firm substantial qualities.

පිච්චි...තිර...සර.....ගුණ

I should not omit to add to the above one other species of composition called *Debas*, or “dialogues.” They are generally the language of imagination, wound up at the conclusion with some reality or praise (as the case may be) which the writer wishes to convey. The following from the *Peralakumbá-sirita* is a good illustration:—

සේසද කිම මුහුද කිම සැඟවෙනු වෙල න

මෙම ගර හස අතින් පැරකුම්මර දිමු න

දෙසි ගිවිදුන් ඔහු මදහස කර ලව ත

තදුන් කැලුම් සොම්ගුණයුත් පමුරු ඇ ත

The above, when rendered into a dialogue, is read as follows:—

The Ocean:—සේසද. O Moon!

The Moon:—කිම මුහුද. What, O Ocean?

The Ocean:—කිම සැඟවෙනු වෙලත. Why does thou hide thyself behind the skirts of the shore?

The Moon:—මෙම ගර හස අතින් පැරකුම්මර දිමුත දෙසි ගිවිදුන්. (Because) the enlightened King Parákrama gives away his (elephants) to those who are in quest of elephants and horses.*

The Ocean:—ඔහු මදහස කර ලවත තදුන් කැලුම් සොම් ගුණයුත් පමුරු ඇත. (Nay) the offering of that silver brilliancy (gentleness) of rays, which thou hast emitted is (alone) sufficient to please him (towards thee, and deter him from such an act).†

* This answer conveys to a person well read in the mythology of the East greater information than the words themselves impart. “I do so, lest the enlightened King Parákrama, who gives away elephants to those who are in quest of elephants and horses, should also part with my own elephant, which is my habitation.”

† The ocean is here represented to have spoken thus: “Nay, the offering of that silver-brilliancy (gentleness) of rays which thou hast emitted is alone sufficient to please him towards thee, and to prevent him from giving away thy habitation.”

Having thus given a brief, and doubtless an imperfect, account of Sinhalese poetry, I shall now proceed to show a few rules of Versification or Prosody.

Quantity, feet, and pauses are necessarily constituent parts of all verses; and one great advantage which the Sinhalese possess over the Western nations, is the existence in the language of the former of symbols for long and short sounds, indubitably expressed, and without reference to usage (very often an uncertain arbiter) for the ascertainment of their quantity. It is for this reason that I have throughout used the word *sound* instead of *letter*. I must, however, not omit to mention that there is a poetical license which permits the use of a long letter for a short or a short for a long letter; but this is very rare indeed in good compositions. The word පිළි *pili*, "short," in the following line, is used for the long පිළි *pill*, "clothes" :—

කොළම ගොවා අඳිනත් බැරි දළපිළි මතුපිට අඳිනට

Even if leaves can be worn by being woven together,

Coarse cloth can I not wear outermost ?

The melody of the Sinhalese verse depends chiefly upon the sounds or letters being short or long,—not to mention what is common to all poetry, the choice of words, the seat of the accent, the pause, and the cadence. As in English, the cæsural pause* is not without effect in the Sinhalese. Of this, the following beautiful lines from the celebrated *Guttala Jātaka* is a good illustration :—

| | | | | | | | | | | | | | | | | | | | |
|-------------------|----|-----|-----|---|----------------|------------|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | = | 2 | = | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 |
| රුඳ්ඳ්ඳ්අඳිනාලෙසේ | : | අත් | : | : | ලෙලදිදිවිදුලිය | බා. | | | | | | | | | | | | | |
| 2 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | = | 2 | = | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | |
| රත්රසේඵක්වනලෙ | සේ | : | වෙන | : | : | නාදනුපාතබන | බා. | | | | | | | | | | | | |

* This pause sometimes falls before the middle of a line, but it does not thereby render the poetry less sweet.

2 1 2 1 1 1 1 2 = 2 = 1 1 1 2 1 1 2 1 2
 කමපසේදෙනසැරලෙසේ : දෙස :: බලබලානෙතගිත්ස බ

2 1 2 1 1 1 1 2 = 2 = 1 1 1 2 2 1 1 1 2
 මමිකෙසේපවසමිඵ සේ : වර :: සුරලඳුන්දුන්රහසු බ

How can I describe the dances of the goddesses—whose hands move like lightning, and as if intent upon portraying a mass of pictures—whose feet move after the music with the same ease with which gold adheres to mercury—and who look at the company from the corners of their eyes with the sharpness of Cupid's darts ?*

The short sounds or letters are called *luhu* or *lahu*, marked in the *Sinhalese* thus, —; and the long sounds, or *al*† sounds, together with their respective vowels, with whose assistance they are pronounced, are called *guru*, marked thus, ˘.

Three of these sounds compose a *foot*, and by a diversity of arrangement these tri-syllables produce *eight* kinds of

* The chief accomplishments of the goddesses are hereby portrayed. Mr. Wilson says at p. 76 of the *Megha Duta*:—

“It is to the Commentators also that I am indebted for the sole occupation of the goddesses being pleasure and dress. That fact—
 to sing, to dance,

To dress, and troll the tongue, and roll the eye—

constitutes a very well-educated female according to the custom of Hindústán.”

Amongst the *Sinhalese*, however, it is different. Except amongst inferior classes, all the above so-called “ornaments of nature,” save elegance in dress, are looked upon by the *Sinhalese* as unbefitting the female sex.

† An *al* letter is a consonant which cannot be sounded without the help of, and being preceded by, a vowel sound, and which has its inherent vowel sound suppressed by a symbol on the top of the letter; e.g., *al* cannot be sounded without a vowel; this, together with its vowel, produces one compound sound: and they are therefore reckoned as two short letters or sounds, or as equal to one long sound. Thus, මම *mama* = ම *m* = මන් *man*.

feet;* and without attending to any particular classification, I shall here enumerate them with their corresponding classical terms :—

| Quantity. | Greek. | Sinhalese. | Meaning. | Sanskrit. |
|-----------|-------------|------------|----------|-----------|
| 1 — — — | Tibrach | දේවතනේ | godly | නතනේ |
| 2 — — — | Anapoest | වායුතනේ | windy | සතනේ |
| 3 — — — | Bacchic | ජලතනේ | water | යතනේ |
| 4 — — — | Amphibrach | හිරුතනේ | sun | ජතනේ |
| 5 — — — | Molossus | බුමිතනේ | earth | මතනේ |
| 6 — — — | Antibacchic | ආකාශතනේ | air | තතනේ |
| 7 — — — | Dactyl | චන්ද්‍රතනේ | moon | ගතනේ |
| 8 — — — | Cretic | ගිනිතනේ | fire | රතනේ |

As in all matters emanating from Buddhists, poetry is with them attended with its good and bad effects upon the poets. But, unlike the Sanskrit, Sinhalese poetry need be free from bad feet only at the beginning of a stanza. The Sinhalese poets have, however, little attended to such a slavish 'fear, and it seems have freely given vent to their muse wherever they could elegantly express themselves.

1. Three short sounds, as in *dōminūs*, compose the *Déva-gāne*, and it is esteemed a good foot.

* The diagram, by means whereof the quantity of poetry is ascertained, is indeed a clever expedient or device, called ප්‍රස්ථාරකරණය, "spreading the rythmical feet." It is borrowed from the Sanskrit and adapted to the exigencies of the Sinhalese. I shall merely content myself at present with the following, which is the correct mode in which the eight rythmical feet are placed, and which is just sufficient to ascertain the quantity of any piece of poetry composed of three letters :—

| Sinhalese. | | Greek. |
|---------------|---|-----------|
| 1 (— — —) | } | (— — —) |
| 2 — (— —) | | (— — —) |
| 3 (— — —) | | (— — —) |
| 4 — — (— —) | | (— — —) |
| 5 (— — —) | | (— — —) |
| 6 — — (— —) | | (— — —) |
| 7 (— — —) | | (— — —) |
| 8 — — — | | (— — —) |

To enter into a detail of this subject will necessarily occupy several pages, which I can hardly afford at present.

Example.

Tibrach.

~~~~~

චෙනඳය අසිතිව	ත්
එබවදුනමුත්සොරසිත්	ත්
පියෝ ඉන් ගැනුමුත්	ත්
දෙවනසිකපද පසහකැසියෙ	ත්— <i>Kāviyaśēharé.</i>

The second institute of religion is said to be compounded of five ingredients ; the taking—the deceit—the intent to steal—another's property—and the knowledge thereof.\*

2. When a long or *al* sound is preceded by two short sounds, as in *spēcīēs*, the rythmical foot is called *Wāyagané*, one of the bad feet. The Sinhalese have a belief that the author of *Guttila Jātaka* suffered transportation—a misfortune, the result of his beautiful work having this foot at its very commencement. That his first stanza is an *anapoest* is true enough ;† but whether he at all suffered banishment is not correctly known except from tradition.

\* This definition of the crime of theft, *furtum*, seems to be more comprehensive than the one in the Institutes—*Furtum est contractatio fraudulosa lucri faciendi gratia, vel ipsius rei, vel etiam usus ejus, possessionis. l. 4l. 1§.* The text, when freely rendered into English, runs : “The second institute of religion is said to be (the abstaining from) *theft*, which comprehends the fraudulent taking away of *another's property* with intent to steal (*lucri causā*), knowing that it is of another.”

† The stanza referred to is the following :—

සි ය පි ත් සි ඊ ත් ස	රු
දෙතිස්ලකුණෙන්විසිතුරු	රු
කෙලෙසුන්කෙරෙත්	රු
වදිම් මුතිලකුමන් තිලෝක	රු

I bow to (his) intelligent Highness (Buddha)—the preceptor of the three worlds (who), having subjugated all the evil propensities of his nature—embellished with thirty (corporeal) beauties, thrived in the (resulting) prosperity of hundreds of meritorious acts.—*Guttila.*

NOTE.—“The subjugation of the evil propensities of human nature” is a doctrine of Buddhism, according to which none but a Buddha can enter into that holy state *without fault or sin*—a doctrine, too, similar to one of the three doctrinal maxims inculcated in the Elusinian Mysteries, “the attainment of mental peace by a course of penitential purification.”

*Example.*

Anapoest.

— — —  
 — — —

ය ස ගි එ නි රි ද	න
නාලියකියන නිවිය	න
නා ර ජ හ ට අ ස	න
මදක්බාද සතුටකළල	න— <i>Kāvīyaṣṣékaré.</i>

The king of the Nágas who (lost in admiration) listened to the sweet songs complimentary to himself oft repeated by the Nága woman, was only interrupted by tears of joy.

*Versified.*

The king of serpents bent his ear  
 To th' oft-repeated lays ;  
 And did, with breathless silence, hear,  
 The music of his praise.  
 The minstrel fair he views and hears,  
 Deep lost in reverie,  
 Until a flood of joyful tears  
 His captive soul sets free.

3. When one short sound is followed by two or long *al* sounds, as in *hōnēstās*, the foot is called *Jalagané*, and it is esteemed good.

*Example.*

Bacchi.

— — —  
 — — —

අ මා වෙ න් වි ස න	ද
බානවිලසින් සුරවෙද	ද
මොහුසින දුක්තොම	ද
සිතා දුරුකරමෙවිපින්බ	ද— <i>ib.</i>

As the divine doctor by means of his heavenly antidote removes the malignant poison (the Bodisat), with an intention to remove the inordinate heaviness of his (the Bráhmín's) heart, said :—

4. A long or *al* sound preceded and followed by a short sound, as in *āmīcūs*, is the *Hirugané*, a bad foot productive of sickness.

*Example.*

Amphibrach.

— — —

ද ද න් කි වි ද න් ගෙ	ණ
බිලිදුන් සහ ලදන්ගෙ	ණ
ක ල ව ර ද නො ම ගෙ	ණ
හලෝපෙරරජතුමෝසසොබ	ණ— <i>Kusa Jātaka.</i>

Ancient, righteous monarchs disregarded the faults of fools (the ignorant), of poets, of children, and of wives.

5. Three long or *al* sounds, as in *dōctōrēs*, compose the *Búmigané*, which is a good foot.

*Example.*

Molossus.

— — —

බ ත් ප් න් ව ත් ස හ	න
ම ල සු ව ද ස හ වි ල වු	න
ප හ න ට නෙ ල වි ම	න
මෙලෙසදන්වත්සමගවාහ	න

The (ten) meritorious gifts (charities) are rice, water, garments, beds, flowers, scents, ointments, oil for the lamp, habitation (lodging), and conveyance.

6. When two long or *al* sounds are followed by a short sound the foot is called *A'hásagané*, a bad one.

Antibachic.

— — —

ද දෙ ස් ම ල වි සි	න
මෝ ර දෙස් ව් සි ම ම	න
ව් න සෙ ත් නෙ ද හ මි	න
කෙනෙක්රජසොරසතුරුබියසෙ	න

Some persons die from (diseases of) *dā*, the constitutional parts of the body ; or *dos*, the functions of life ; or *mala*, the excretions of the body ;—others die from folly, (excessive) lust, or evil



passions ;—others from unrighteous acts ;—and others again from causes (immediately) proceeding from kings, thieves, and enemies.\*

7. When two short sounds are preceded by a long or *al* sound, as in *cārminā*, the foot is termed *Chandraganē*, a good one.

*Example.*

Dactyl.



ඇල්නලවිදඵනවැදසමනි ද්දේ  
කල්බිතුරුචුඳිමල්තුරුම ද්දේ  
නල්ඇතුගෙන්බැසනිරිදුසසිද්දේ  
ලොල්කරනරඹාලවන ඇවිද්දේ

The far-famed monarch having descended from his stout elephant, walked with alacrity, inspecting the park, amidst flower trees echoing the buzz of the bees, and enjoying the cool air impregnated with (the sweets of) jasmine (*Jasminum grandiflorum*) and *idda* (oleander) flowers.

8. The last and the most objectionable foot is the *Giniganē*, consisting of a short sound preceded and followed by a long or *al* sound, as in *Cāstūtās*.

Cretic.

*Example.*



රුරු සේ අදිනාලෙ සේ අත්ලෙලදිදිවිදුලසප බා  
රත්තර සේ එක්වනලෙ සේ වෙනනාදනුපාතබත බා  
කමිප සේ දෙනසැරලෙසේ දෙස බලබලානෙතගින්ස බා  
මමිකෙසේ ප ව ස මි එ සේ ව ර සු ර ල දු දත්තසු බා†

\* *ද* *dā*, *දොස්* *dos*, and *මල* *mala*, according to the doctrines of the Singhalese books on medicine, are the three constituent parts of the human frame, and whence all distempers result. *Dā* comprehends: 1 taste, 2 blood, 3 flesh, 4 fat, 5 bone, 6 marrow, and 7 semen; *dos* comprehends bile, phlegm, and wind; and *mala* are the seven excretions of the seven *ද*; i.e., 1 phlegm, 2 choler, 3 ear-wax, serum, &c., 4 sweat, 5 nails and hair, 6 excrement; and 7 rheum, sediment.

† *Vide* translation, *supra*.

Besides the avoidance of evil feet, a serious clog in the way of elegant versification, one other difficulty is chiefly attributable to the necessity of avoiding the use of certain letters which are deemed objectionable by writers of great authority. The author of "*Sidatsangaráva*" has laid down the following rule:—

එකයමරජඅනණලඞ්ඞවක	ර
උපබගහානරනමිතිරිවේඅම	ර
සුරකරපෙරපසැතිවැඩදේඅවක	ර
නසාසුබසියලීනරකරුමැදුන්සර	ර

The above, when freely rendered into English, means :—  
Of the alphabet,\* එ, ක, ය, ම, ර, ජ, අ, න, ණ, ල, and ° are evil characters ; උ, ප, බ, ග, and හ are human characters ; and the rest, ඉ, ඔ, ට, ව, න, ද, ව, ස, ල, are divine characters ; any one of which last must be preferred to the human characters, both in the beginning of a stanza as well as before and after the name of any person mentioned therein. The evil letters, as being destructive of all prosperity, are to be avoided at those places.

අමතලඞ්ඞවගවණසිපිපිලිවෙලි	නා
යොදු නකුල්මිසුමහවත්වගසපු	නා
තුරහබිලිපුටුසරහන්දන කෙමෙ	නා
පෙරපසුයොන්බදුනමයෝනටහොබ	නා

By dividing the alphabet† into four, so as to produce the letters අ, ම, න, and ල respectively in the beginning of each division, the following diagram consisting of eight classes is produced :—

\* *I. e.*, five vowels and twenty consonants, without reference to the long vowels, since they are produced from the short.

† The *Sidatsangaráva* confines the Ełu alphabet to ten vowels and twenty consonants ; *vide supra*.

Weesel.	Buffalo.	Owl.	Tiger.	Serpent.	Horse.	Raven.	Deer.
1	2	3	4	5	6	7	8
අ	ආ	ඉ	ඊ	උ	ඌ	ඍ	ඎ
ඏ	ඐ	එ	ඒ	ඓ	ඔ	ඕ	ඖ
඗	඘	඙	ක	ඛ	ඛ	ඞ	ඟ
ච	ච	ඡ	ඣ	ඤ	ඦ	ට	ඨ

The first class letters, called *Nakul*, "weesel," are inimical or opposed to the fifth, called *Saputá*, "serpent"; the second, *Miya*, "buffalo," to the fifth, *Turanga*, "horse"; the third, *Mahavat*, "owl," to the seventh, *Biliputu*, "raven"; and the fourth, *Vaga*, "tiger," to the eighth, *Surangan*, "deer." All the characters opposed to the first letter of a person's name must be avoided both *before* and *after* that person's name.

It is also laid down as a rule of versification in several books of authority, that it is objectionable to rhyme a stanza with any of the following sounds : ජ, ච, ඡ, and ඣ, unless the penultimate letter, *i. e.*, the letter immediately preceding any one of the above characters, be the same in all the four lines ; \* *e. g.* :—

ජ.

දුදන සහ වා	සය
සැම දුකට මුල් දෙ	සය
සුදන සහ වා	සය
එසේනොවසැපදෙසි විසේ	සය

*Karminikoṇḍala.*

\* I must not omit to remark that this is a rule strictly attended to by all who have the slightest claim to scholarship. Indeed I have not found a departure from it by any of the standard writers amongst the Sinhalese.

The association with the wicked is the primary cause of every species of ill ; but the company of the righteous will, on the contrary, result in prosperity.

ව.

දුදනන්ගෙන්ද	රුව
සුදනන්කෙරෙහි මිතු	රුව
ගුණනැතිහි ගැඹු	රුව
දිලේම්වාකුලවිමනමිතු	රුව— <i>Kusa Jātaka.</i>

Away from the wicked—attached to the righteous—possessed of deep wisdom and gentle virtues ; may I flourish (like a lamp) in the household of my race.

හ.

රජදම්නොකල	සිහ
සස රැසින් දියනු	සිහ
විකුමැති එතර	සිහ
නමැතිවිකිත් සිරිතර	සිහ

Full (unempty) of kingly virtues \*—replete with the rays of his worldly renown, and of great prowess, was the lion of men, Kṛīti Śrī Rāja Siṅha.

න්.

දෙබැම දෙදුනු	වන්
පවුනලලන වසඳ	වන්
ඇඟෙ දිගුසුග සව	වන්
කෙලෙවරුසිරුරනෝවිලි	වන්

*Kāviyaṣēkaré.*

Her two brows were like the rainbow, her narrow forehead like the moon in her crescent, and her two long

\* The ten moral virtues of kings are here meant, and which are 1, charity or almsgiving ; 2, observance of religious precepts ; 3, liberal in presents ; 4, uprightness and justice ; 5, tenderness ; 6, addicted to religious austerities ; 7, mildness of temper ; 8, compassion and mercy ; 9, patience ; 10, peacefulness.

pendant ears like the golden swing of beauty's goddess, Lakshmi.\*

\* \* The numerousness of the Sinhalese poetical works, the paucity of information regarding their writers, the difficulty experienced in the collection of even the little known of them, and the absence of a library to which reference may be conveniently had,—added to my other pursuits (which leave me but little leisure),—do not, I regret, permit me to bring to a close the last division of my paper—the Sinhalese Poets. I have, however, drawn out a few remarks, though even these will, I fear, exceed the bounds which I originally intended for this Paper. I must therefore content myself at present with the following, with a hope of continuing the subject hereafter :—

*Kāvīyaṣṭhāra.*

“A garland of flowers on the crown of poetry.”

Perhaps no poetical work in the Sinhalese surpasses this in point of originality and depth of thought, and of

“Her narrow forehead like the crescent moon,” it would seem, savours much of Oriental imagery. English poets have always considered “an ample forehead” or “a spacious forehead” as beautiful; here the very reverse is the admiration of the Sinhalese poet! But, it must be remarked, that however “ample” or “spacious” the forehead, it does not bear any resemblance to the full orb, but the moon in her *vane*. Hence, although the poet has evinced but little taste by his allusion to “her narrow forehead,” he yet, in my opinion, is far more correct than many who have compared the forehead to the full moon. Mr. Wilson, in a note to the *Megha Duta*, at page 106, says: “Comparing a beautiful face to the moon has been supposed peculiar to Oriental poets; instances, however, may be found in English verse. Perhaps that passage in Pope, where, speaking of an amiable female and the moon, he says :—

‘Serene in virgin modesty she shines,’

may not be exactly in point, although the general idea is similar. Spencer, however, is sufficiently precise—

‘Her spacious forehead, like the clearest moon,  
Whose full-grown orb begins now to be spent,  
Largely displayed in native silver shone,  
Giving wide room to Beauty's regiment.’”

gance and correctness of expression. Its diction is simple, and its imagery sterling and rich. It was written by a Buddhist priest of the name of *Totagamuvé* (after his native village in the south of Ceylon), properly called *Srī Rahūla Sthavīrayó*, who was the teacher of the celebrated Chandrabhārati, the author of *Bauddha-ṣatake* (බුද්ධසතක) and two other valuable works—one of which is a commentary on Sanscrit Prosody and the other the well-known *Vīrttimálākhyāva*, (වීර්තිමාලාකාව.) Totagamuva converted his Hindú pupil to Buddhism, and thereby received the thanks of his countrymen, including his sovereign, Srī Parákrama Báhu VI., 1410. A.D. The poet was a favourite of the king, and continued to benefit by his patronage to the same extent that he had, before taking holy orders, been fostered in the king's household. The priest was not ungrateful to his benefactor. He gave him the most invaluable token of his regard,—the use of his pen; and, besides dedicating the work under consideration to the Princess Royal, Ulkuda Dévi, at whose request it was composed, he addressed to the king several stanzas of great beauty. He possessed a correct knowledge of several Oriental languages besides the EĪu.\* Hence the self-importance which he seems to

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\* The foreign languages of which this scholar was a proficient are enumerated in the paraphrase to the *Seḷalihiṇi Ṣandésé*. They were six in number: *Sanskrit*, *Maghadi* (or *Páli*), *Apabhrāṇse*, *Paisāchi*, *Sureseyni*, and *Tamil*.

Most of our readers are probably acquainted with what is meant by *Sureseyni*; but it may not be amiss to state that it is the *Zend*. The *Edinburgh Review* for April, 1810, at pp. 396–97, in reference to a paper written by Dr. Leyden, on the language and literature of the Indo-Chinese nations, says: "Dr. Leyden imagines that the *Páli* may be identified with the *Magahdi*, and the *Zend* with the *Sureseyni* of Sanscrit authors; but without stating the grounds for the conjecture. We conceive that the emigration of the *Sureseyni* under Crisna, from the banks of the *Yamuna* to the shores of the ocean on the west of Guzerat, would afford much countenance to the conjecture, if supported by other proofs."

have assumed in the *Kāvīyasékaré*, a weakness though common to many, if not all, poets, yet in this instance without, I believe, its parallel in the history of the world. He speaks of himself in the following strain:—

සවිසත කෙළ පැමි	මි
ගුරුවන් දෙරණ සපැමි	මි
පිරිසිදු සිල්ලිහි	මි
සියල් ලෝ විසතුන්ට සිඵමි	මි

Like a Brahaspati\* on earth renown'd,  
The limits of each science fully found,  
Radiant with heavenly-derived religion's beams,  
On learning's head a living gem he streams.

*Literal translation.*

Arrived at the end of all sciences,  
Like a Brahaspati who entered the earth,  
And possessed of an assemblage of pure observances of religious duties,  
A gem (am I) worn on the head of all eminent talents in the world.

This is a work which cost the writer years of great labour, although, judging from its easy and unlaboured style, one is led almost to disbelieve the writer's own account of it, that it was commenced 1958 A.B., or 1415 A.D., and was concluded in the 34th year of the reign of Sri Parákrama Báhu VI., who ascended the throne 1953 A.B., or 1410 A.D. For, if the writer brought this work to a termination in the 34th year of the reign of the said king, he must have spent twenty-nine years in the composition of 885 stanzas, unless indeed the dates given in the *Mahāvamsa* cannot be relied upon. He next wrote the celebrated—

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\* *Brahaspati* :—The teacher of the Hindú gods is often designated by a term supposed to be its equivalent—Jupiter. But this I believe is incorrect, since the one has nothing in common with the other. The Grecian Zeus and the Roman Jupiter is more like Brahma in one sense and like Indra in another. "He is the site of gods and men; also the Thunderer."

*Selalihini Sandésé* (සැලලිහිනිගන්දේසේ).

“An epistle per *Gracula religiosa*.”

Well indeed may this work be compared to the *Megha Dūta* of *Kalidasa*. The writer's thoughts, brilliant and original, sparkle as we go along his elegant and flowing rhymes. Both the ear and the mind are at once satisfied. His language is free, and has a fascination which words cannot describe. His illustrations are truly original and lively. We shall present the reader with the following specimen :—

- 1.—සැරද සුලකලකුරු මිසුරුතෙපුලෙන් රදනා  
රජකුලරහස මැතිනිය සියනිති සැලලිහිනිසද.
- 2.—පුල්මල්කෙසරු මෙන් රන්වණි තෙලෙ සරණසුග  
සසුමල්කැතෙව් තුඩ මදරතීනි පැහැස ර  
නිලසුල්දෙලෙව් සමිවණි පිය පියපත ර  
මලින්කල රූඵඵ එබැවින් නුබිතෙනවර
- 3.—නිලද ලදසිදුමුවො දිගුවරලනි ල  
නිලදවට බිතුපෙල අද තඹරනි ල
- 4.—වතදෙව්ලියෝ නොකලොද සවණ අවර ණ  
එනමග දුකෙන් නොවිද සබදිනි කල ණ  
සෙනෙහස බැදුනුතැන නොහරිණ කරදිවු ණ  
වෙන සැප කුමට නොප දකිනා එමපම ණ\*

*Versified.*†

Hail wond'rous bird ! whose wisdom's pow'r is known  
To equal theirs before the royal throne—  
Bird of the sweet and richly varied lay,  
Long may'st thou flourish 'midst thy fellows gay !

\* The above, which is the opening address of the poem, is what is called *සැහැලි*, *Sepheli*, consisting of, first, a blank verse ; second, a verse whose four lines are of different feet, except the second and third, which not only rhyme but are equal in their number of feet ; third, half a stanza followed by, fourth, a complete stanza. Of this genus there are divers species.

† For this, as well as the last translation into English verse, I am indebted to Mr. J. R. Blake, and for the following to Mr. A. M. Ferguson.



How does thy feet a golden hue disclose,  
 So like the pollen of a full-blown rose ?  
 How does thy ruddy bill enchanting glow ?  
 Not fairer blossoms can the *champac* show !  
 And what can match thy wing's superior hue,  
 Which wave, wide-spreading, like the lotus blue ?  
 When, beauteous as a vegetable gem,  
 Which winds have sever'd from its parent stem,  
 Thou soar'st, exultant, through the balmy air ?  
 Have not young goddesses made thee their care,  
 And fix'd thee, fluttering, in their jetty hair ?  
 And have not bees, who take their nightly rest  
 Within the water lily's fragrant breast,  
 Deceiv'd, crowd round thee in their mid career  
 In search of honey, through the fields of air ?  
 And have not Dryads, bright in charms divine,  
 Taught thee as pendants in their ears to shine ?  
 Friend of my soul ! say, hast thou e'er been prest  
 With pangs so fierce as those that wound my breast ?  
 No, happier in thy love, thy life is peace,  
 And rolling years but bring thy bliss increase ;  
 Such bliss, as searching the wide world around,  
 Save in thy presence, friend, is nowhere found.

*Literal translation.*

*O Gracula religiosa !* in wisdom equal to that of ministers of princes, and of speech sweet, and composed of excellent notes ! mayest thou in the company of thy species live long ! When thou, whose (two) feet are of golden hue, like unto the pollen of a full-blown blossom—whose beak partially red and glistening, like unto a cluster of champaka flowers—and whose wings, black and delightfully wide-spread, like unto the leaves of the blue lotus ; (when thou) takest thy airy flight like a flowery figure : have not youthful goddesses dressed thee in their long jet-black (blue) hair ? Have not swarms of bees, which make the lotuses their habitation, approached and encircled thee ? Have not the goddesses of the forest made thee their ear ornaments ? Has no

(such) ill befallen thee in thy journey? Happy friend! who possessest inviolate, and with increasing vigour, an attachment which thou mayest form: what is bliss save that which is known in thy presence?

Toṭagamuwa undertook this work with grateful affection for the king and his country. He felt interested in the welfare of the young family of Parákrama Báhu VI., and indeed sympathised with the Princess Ulkuda, who mournfully longed for a child. The argument of the poem is well conceived. It is an epistle addressed to Vībushana, the presiding deity of the Kēlani temple, invoking the blessing of a grandson to the king (or rather a son to the princess), and as if intended to be conveyed by means of a bird of the name of *Seḷakihini* from Kóṭṭé, the seat of the then Government. No precise date is given in this work, although we learn from other data that it was written a year after the last. It contains one hundred stanzas.

The poet next gave to the world his

*Paravi Śandésé* (පරවිඤ්ඤප්පි).

“An epistle per a pigeon.”

A poem of great merit, and generally of a piece with the last in style, although perhaps in many parts inferior to it in imagery. It was an epistle addressed to Krishna, invoking blessings upon the army—the king’s brother of the name of Parákrama, who had the government of Jaffna, or Mayaduna—and upon Chandrawati, the granddaughter of the King Parákrama Báhu VI. The poet’s attachment to the family of his sovereign seems to have been indeed great. Even in this there are tender allusions to the royal family. That Chandrawati might soon enter the bonds of matrimony, and that, allied to a noble prince, she might soon be the mother of a virtuous son, are amongst the orisons of the writer and the topics of his song. No date is given to this work; nor is it easy to ascertain it. But from the slight difference of style to which allusion has been

made, I am led to suppose that this was written shortly after the last. I select the following as a specimen of its style :—

සැරද පරෙවිදුසද පවුටන් සුරත්සරණින් ||  
 පහල කිරිමුහුදින් සහ පබලපපදසක්වත්—  
 මිතුරුතුරු සරහන මමිතුරු නවවසන සුරු—  
 නුබිනෙතසද නද මදමද පවතලෙ ලී  
 හෙබිපුල් කුමුදු හැහැ නොගනුද අතින්ති ලී  
 සුරගහිනල නෙළුබුදුලිය දහස නොවෙතපත—  
 සුදුබුදුනිවසිනෙත නොපදක ලෙවි එස ද  
 සුදුබුදුරැස්පිබෙකැසි නොකලෝද පු ද  
 සදෙකින් නදුනුසනිනෙතමලෙක සුරන මේ  
 සදෙකින් ලොබින් වටලා නොදුමුදු ඉ මේ  
 නිදුකින් අවිද සකිසද අතරමගන මේ  
 ඉතිකින් අපට සැපනමි දුක්මමයි නු මේ

*Versified.*

Hail ! beauteous dove, the subject of my lay ;  
 Long may'st thou live, through heaven's blue vault to stray !  
 When on thy sacred mission thou had'st sped,  
 With plumage white and feet of roseate red :  
 Like one of those pearl-gleaming shells that rest  
 On coral stems in milky ocean's breast ;  
 Like the star-spangled, clear, autumnal sky ;  
 When borne on gentlest breeze thou passed'st by,  
 Did not the gazers hail a lily given,  
 Full-blown and bright—a blossom dropt from heaven ?  
 Did'st thou not seem, with thy soft pinion's quiver,  
 A lotus-bud from the celestial river ?  
 Did they not offerings make, and homage pay,  
 As unto Buddha's brightest, purest ray ?  
 Did not e'en goddesses, delighted kiss,  
 What seemed a flower from Indra's bowers of bliss ?  
 Hast thou unscath'd pursued thy airy flight ?  
 Hail noble friend, dear to our longing sight !

*Literal translation.*

Mayest thou, O noble pigeon, live long ! My friend ! by reason of thy yellow-white hue and deeply red feet, like unto a chank with coral plants produced from the milky ocean—like unto the clear autumnal (sky) bespangled with the sun and the stars ! when thou wast slowly moving in the sky, and in a delightfully gentle breeze, were not (people) deceived in thee for a beautifully full-blown white lily dropt from (heaven) ? Did they not approach thee under a belief that thou wast a lotus-bud fallen off from the celestial river ? Did they not make offerings to thee under the impression that thou wast a white ray emitted from Buddha's pure court ? Did not goddesses kiss thee with delight under the mistaken idea that thou wast a flower from Nandene, the heavenly park ? Hast thou arrived without accident in thy aerial journey ? Noble friend ! To us thy sight is bliss !

Although many were the writings of this eminent scholar, the only other work handed down to us with the sanction of his own name is *Moggallāyana Patipañchakā* (මොග්ගලලායන පටිපට්ඨක), a commentary on the Pāli grammar written by a pandit of the name of *Moggallāyana*.

*Perakumbā Sirité*

(පැරකුමාසිරිතේ).

“The character of Parākrama Báhu.”

Although the poet has not given us his name, we yet have internal evidence sufficient to justify the conclusion, consistent with a tradition on the subject that the above was written by the author of the last. It is true that, unlike the rest of the great writer's works, this contains a great admixture of the Sanskrit ; but, nevertheless, wherever the language is purely EĒu, it has indubitable evidence of the great scholar's style, his masterly and peculiarly fine turns of expression, and his originality and depth of thought. From this and the *Seḷalikhini Śandésé* and *Paravi Śandésé* we may select three verses written of the reigning sovereign, in the same measure, with the same rhymes, and

the same peculiarity of expression, but with an originality of thought in each which is surprising, and certainly uncommon. Many a sentiment of the writer in praise of Parákrama Báhu, whose character and virtues the poet has delineated in this work, is indicative of the kind feelings which he entertained towards his patron and sovereign, and the knowledge he possessed generally of his country's history. This poem may indeed be ranked amongst, and is by no means inferior to, the rest of the supposed writer's works, but for the admixture of foreign words, which, it appears to me, the writer intentionally introduced with a view to adorn his Sinhalese with the glittering ornaments to the celebrated "language of the gods"—the Sanskrit. The following will serve as a specimen :—

පැහැදිසර මිබා රැදි මහර මිබා  
 තුනුසිරි මිබා පති පිළිබි මිබා  
 රුපුරණ මිබා වන මහතු මිබා  
 දින පැරතු මිබා හිමි හෙවිතු මිබා

Prosper thou Lord Parákrama Báhu ! who hast a gentle arm like Krishna's—an arm which is the abode of the lovely Laksmi—who art beautiful as the consort of the goddess Ramba, and powerful as an enraged elephant in the battlefield-like plantain estate.

*Kovul Sandésé* (කොවුල්සන්දේසේ).

"An epistle per an Indian cuckoo."

This is a poem which sustains a like character as the last, and written by Totagamuwa's contemporary, Irugalkulé Pariwenáhipati, the presiding priest of Mulgiri-gala. The writer in this poem seeks a blessing from Krishna, the deity presiding over the temple at Devundara (Dondra Head), upon Prince Sengapperumal, or Sapumal, the son of Parákrama Báhu VI. ; and also prays that the war in which the prince was then engaged at Jaffna (probably in support

of his uncle against A'riya Chakkravartti, the king of Karwati) might prove victorious. Again, no date is to be found in this work. Mention, however, is made of the prince ; and the war is spoken of in terms which clearly indicate that his success was uncertain at the time the poet wrote. But *Sēlalihini Sandésé*, which we have above considered, alludes to the same war, and the poet joins in the general shout of joy amidst which the prince was then returning to his father at Kótté after a successful encounter with his country's foes. We are thus led to conclude that the work under consideration was written at most a few months, if not weeks, before *Sēlalihini Sandésé*. The following is a specimen from the work under consideration :—

තෙවලාසත්රුවන්හර පැලඳිලකු	ම
තෙවලාවදනිසුරුවිජයබතෙරිදුකු	ම
සබාසමුවලොවවෙසෙසින්පෙනුනලෙ	ස
සබාසකවිබැඳලන්සඳතෝපිවි	ස
සුබාසුරිදුසපුමල්කුමරුවැනුස	ස
සබාසයෙන්අස්නක්ගෙණයෙමිපව	ස

O bird ! enter thou into (the presence) of the chief of the temple, Wijaya Báhu, supreme master of the Tripitaka doctrines, adorned (in his neck) with the golden garland of Piṭa-kaṭṭiya, and amidst his poetical labours in the six languages exhibiting to the world the same beautiful but natural form that Kanda Kumára presented ; and say that thou carriest an epistle in the native language expressive of the prosperity of the India-like Prince Sapumal.

( To be continued.)

# LIST OF MAMMALIA OBSERVED OR COLLECTED IN CEYLON.

By E. F. KELAART, M.D.

## Order PRIMATES.

### Family SIMIADÆ.

1. Presbytes cephalopterus, The Nestor, *Kaḷu Wandurá*.  
*Zimm.*
- Var. *b. monticola, nobis.* The Kandyan variety.
2. Presbytes Thersites, *Elliot.* The Jaffna Monkey, *Ḙli Wandurá.*
3. Presbytes Priam, *Elliot.* The Crested Monkey, *Kondé Wandurá.*
4. Macacus Sinicus, *Linn.* The Bonnetted Maccaque, *Rilawá.*

### Family LEMURIDÆ.

5. Loris gracilis, *Geoff.* The Loris, or Sloth, *Una Hapuluná.*

### Family VESPERTILIONIDÆ.

6. Pteropus Edwardsii, *Geoff.* The Roussette, or Flying Fox, *Maha Varulá.*
7. Pteropus seminudus, *n.* The smaller variety.  
*sp., nobis.*
8. Cynopterus marginatus, The Margin-eared Bat, *Koṭa-kan Varulá.*  
*Gray.*
9. Megaderma lyra, *Geoff.* The Megaderm.
10. Hipposideros Templetonii, *nobis.* The Horse-shoe Bat.
11. Hipposideros atratus, *n.b.* Species of same.
12. Hipposideros Lankadiva, Large Horse-shoe Bat.  
*n. sp., nobis.*
13. Rhinolophus rubidus, *n.* Red Horse-shoe Bat.  
*sp., nobis.*

14. *Rhinolphus*, *n. sp.*? Kaḍugannáwa species.  
 15. *Nyctcejus* Heathii, The Barbastelle.  
*Horsf.*  
 16. *Nyctcejus* Isabellinus, New species of same.  
*Blyth.*  
 17. *Kirivoulha picta*, Gray. The Painted Bat, *Kehe Wamulá.*  
 18. *Taphozous Longimanus*, The Long-armed Tarpshien.  
*Hard.*

## Order FERÆ.

## Family FELIDÆ.

## A.—FELINA.

19. *Leopardus varius* (*Felis* The Leopard, or Chetah, *Kot-iyá.*  
*Leopardus*).  
*Var. melas.* Black variety of same.  
 20. *Felis viverrinus*, *Hodg-* The Tiger Cat, *Handun son.* *Diviyá.*  
 21. *Felis Chaus*? The Lynx-like Cat, *Kula Diviyá.*

## B.—VIVERRINA.

22. *Viverricula* (*Viverra*) The Indian Genette, *Urulṭṭvá.*  
*malaccensis, Horsf.*  
 23. *Herpestes vitticollis*, The Streaked Mongoose.  
*Elliot.*  
 24. *Herpestes griseus*, *Sykes* The Common Mongoose,  
*Mugaṭiyá.*  
 25. *Herpestes flavidens*, *n. sp.? nobis.* } These may turn out to be  
 26. *Herpestes rubiginosus*, } two new species recently dis-  
*n. sp., nobis.* } covered by Mr. Waller Elliot.  
 27. *Paradoxurus Zeylanicus*, The Golden Paradoxure.  
*Schreb.*  
*Var. b. fuscus.* Black-brown variety of same.  
 28. *Paradoxurus typus*, *F.* The Palm Cat, *Uguduvá.*  
*Cuv.*

## C.—MUSTETINÆ.

29. *Lutra nair*? *Sykes.* The Otter, *Diya Balla.*



## D.—CANINA.

30. *Canis aureus*, Linn. The Jackall, *Nariyá*.

## Family URSIDÆ.

31. *Ursus labiatus*, Blainv. The Indian Bear.

## Family TALPIDÆ.

32. *Sorex murinus*, Linn. The Musk Shrew, *Kunu Mityá*.  
 33. *Sorex montanus*, *n. sp.*, The Black Mountain Shrew.  
*nobis*.  
 34. *Sorex feroculus*, *n. sp.*, The Long-clawed Shrew.  
*nobis*.  
 35. *Sorex ferrugineus*, *n. sp.*, The Dimbula Shrew.  
*nobis*.

Two specimens of Hedgehogs are in the Army Medical Officers' Museum at Colombo, but it is doubtful whether they are natives of Ceylon.

## Order CETÆ.

36. *Halicore dugong*, F. The Dugong, *Mudú Urá*.  
*Cuv.*

Species of Dolphins, Porpoises, and Whales are also occasionally found in the neighbouring seas.

## Order GLIRES.

## Family MURIDÆ.

37. *Mus bandicotta*, Bechst. The Bandicoot, or Pig Rat.  
 38. *Mus decumanus*, Linn. The Common Brown House Rat.  
 39. *Mus Kandianus*, *n. sp.*, The White-bellied Rat of the  
*nobis*. Kandyan Province.  
 40. *Mus Asiaticus*, Gray. Paddy-field Rat.  
 41. *Mus arboreus*, B.H.M.S. The Large Tree Rat.  
 42. *Mus Ceylonus*, *n. sp.*, Small Outhouse Rat of Co-  
*nobis*. lombo.  
 43. *Mus musculus*, Linn. The Mouse.  
 44. *Mus nuwara*, *n. sp.*, *nobis*. The Nuwara Eliya Soil Rat.

45. *Mus coffæus*, *n. sp., nobis*. The Coffee Plantation Rat.  
 46. *Mus tetragonurus*, *n. sp., nobis*. The Four-sided Tail Rat of Colombo.  
 47. *Mus dubius*, *n. sp., nobis*. The Short-tailed Godown Rat of Kandy.  
 48. *Gerbillus indicus*, *Cuv.* The Indian Yerboa.

## Family HYSTRICIDÆ.

49. *Hystrix leucurus*, *Sykes*. The Indian Porcupine, *Itéva*.

## Family LEPORIDÆ.

50. *Lepus nigricollis* The Indian Hare, *Hává*.

The Rabbit and Guinea Pig have been introduced in the Island.

## Family JERBOIDÆ.

51. *Sciurus macrurus*, *Forster*. The Rukiah, *Dañdu Léná*.  
*Var. b. moutanus*, *S. Tennantii*. The mountain species.  
 52. *Sciurus tristriatus*, *Waterh.* The Palm Squirrel, *Léná*.  
 53. *Sciurus sublineatus* (trilineatus), *Waterh.* The Olive-coloured Squirrel of Nuwara Eliya.  
 I have not yet seen the *S. Layardii*, *Blyth*, *S. Brodei*, *Blyth*, nor the *S. Kelaartii* of *Layard*.  
 54. *Pteromys oral*, *Blyth and Tickell* (*P. petaurista* of former list) *Léná*. The Flying Squirrel, *Egallé*.  
 55. *Sciuropterus Layardii*, *n. sp., nobis*. The Flat-tailed Flying Squirrel of Dimbulla.

## Order UNGULATA.

## Family BOVIDÆ.

## A.—BOVINA.

56. *Bos taurus*, *var. indicus*. The Indian Ox, *Haraká*.  
 57. *Bubalus buffelus*, *Gray*. Tame and Wild Buffalo.

Varieties of Sheep and Goats are also domesticated.

## B.—MOSCHINA.

58. *Memmina indica*, *Gray*. The *Memmina*, or Indian Mouse Deer, *Wal Muvá*.

## C.—CERVINA.

59. *Muntjacus vaginalis*, *Gray*. The Muntjac, or Ceylon Red Deer, *Veli Muvá*.  
 60. *Axis maculata*, *Gray*. The Spotted Deer, *Tik Muvá*.  
 61. *Cervus* (species not identified). The Paddy Field Deer.  
 62. *Cervus hippelaphus*, *Cuv*. The Rasse, or Sambur Deer, *Góná*.

The Horse and Ass are also introduced in the Island. Mules are rarely seen.

## Family ELEPHANTIDÆ.

## A.—ELEPHANTINA.

63. *Elephas indicus*, *Cuv*. The Indian Elephant, *Aliyá*.

## B.—SUINA.

64. *Sus indicus*, *Gray*. The Indian Wild Boar, *Wal Urá*.

The domesticated Hog (*S. scrofa*, var. *Sinensis*) is plentiful in the Island.

## Family DASYPIDÆ.

65. *Manis pentadactyla*, *Linn*. The Pangolin, or Scaly Ant-eater, commonly but erroneously known in the Island as the Armadillo, *Kebelluvá*.

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The words in italics after the English are the Siphalese names.

DESCRIPTION OF NEW SPECIES AND VARIETIES  
OF MAMMALS FOUND IN CEYLON.

BY E. F. KELAART, M.D.

PRESBYTES CEPHALOPTERUS, var. *b. MONTICOLA*, nobis.

THE variety of the Nestor, found in great abundance in the higher parts of the Kandyan Provinces, differs from the low country animal chiefly in the absence of the white on the croup and inside of the thighs. It also attains a larger size, is stouter limbed, and is generally of a darker colour, with a rufous tinge on the neck, and the hair longer and more wavy.

Mr. Blyth, to whom I sent a specimen from Nuwara Eliya, is inclined to consider this a distinct species; at all events, he thinks that it bears the same affinity to the *P. cephalopterus* of the jungles of the low country as *Sciurus Tennantii* of Layard does to *S. macrurus*. This is the large monkey noticed in Colonel Forbes' work on Ceylon as inhabiting Nuwara Eliya. A female specimen killed at Nuwara Eliya measured as follows:—

		ft.	in.
Length from vertex of head to root of tail	...	1	5½
„ of tail	...	2	2
„ from ear to chin	...	0	3½
„ of forearm	...	0	7
„ of palm	...	0	2¼
„ from knee to heel	...	0	7¼
„ of foot	...	0	6
„ of sole	...	0	4

This is but a medium-sized specimen. The one sent to Mr. Blyth was larger. They are usually seen in large

numbers jumping on the trees, and when disturbed make a peculiar short howling noise. One was known to have attacked a cooly on a coffee estate carrying a rice bag. The Malabars eat the flesh of this monkey, and consider it very delicious food; and some Europeans who have tasted it are of the same opinion.

*HIPPOSIDEROS TEMLETONII, nobis.*

*Rhinolphus Voulha*,\* Temp.

Above dusky brown, this colour being confined to the tips of the hairs, the rest being grayish. Beneath, lighter coloured. In males, above and behind the complicated nasal appendage there is the cup-like depression containing a waxy matter, apparently secreted by a glandular body placed under the skin, so often seen in other species of *Hipposideros*. Tail exerted for about one-eighth inch.

Length of head and body ...	...	3 inches.
Tail ...	...	1 „
Expanse ...	...	11 „

Dr. Templeton has fully described this species and the next, which he was inclined to believe was only a variety, in his unfinished Catalogue of Ceylon Mammals.

*HIPPOSIDEROS ATRATUS, nobis.*

*Rhinolphus ater*, Temp.

Smaller than the last; tips of hair sooty blackish brown, the rest silvery grey; membrane, also darker coloured, beneath fuscus.

Both these species are common in old buildings in Colombo. I have also seen them in Kandy.

*RHINOLPHUS RUBIDUS, n. sp., nobis.*

Head and body of a deep orange red colour; membrane pale brown; interfemoral membrane, enclosing the whole

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\* *Vavulá* is a very vague term for a species of bat, for *Vavulá*, the Siphalese word, applied to all bats.

tail, and the free edge running almost in a straight line and rounded off near the tail.

Length of head and body	...	1½ inch.
Length of tail	...	0¾ "
Expanse	...	8 "

I am unable to give a description of the complicated nasal processes, as all the specimens received were dried and imperfectly preserved. This beautiful bat is seen at Kadugannawa (2,000 feet) only for a few days in the month of August.

*RHINOLPHUS, n. sp. ?*

Rufescent brown; face slightly fulvous; round the ear and on the sides of the posterior half of the body bright fulvous; tail enclosed in the interfemoral membrane.

Head and body	..	2½ inches.
Tail	...	1 "
Expanse	...	11 "

Only one dried specimen procured by my brother from Kadugannawa. None seen since.

*HERPESTES FLAVIDENS, n. sp., nobis.*

Yellowish brown; hair annulated with brown and yellow rings; tips yellow; tip of tail of a reddish colour; muzzle blackish; chin flesh-coloured; face brown and slightly ferruginous; ears fulvous, thickly clothed with hair; feet blackish; soles,  $\frac{3}{4}$  bald. A full-grown specimen obtained at Kandy measured as follows:—

	ft.	in.
Length of head and body	...	1 4½
Tail	...	1 0½
Planta	...	0 3
Palma	...	0 1¾
Small intestines	...	4 5
Large intestines	...	0 7½
Cæcum (pointed)	...	0 2
Stomach and pylorus	...	0 4½

This species was supposed hitherto to be only a variety of *H. griseus*, but there are strong characteristic differences between the two—the golden yellow rings and tips of hair are very marked. Generally found in the higher parts of the Island. I obtained one of a very deep brown and yellow colour from Nuwara Eliya.

HERPESTES RUBIGINOSUS, *n. sp., nobis.* Dito, Sin.

Reddish and ferruginous brown—more of the red on head and outer sides of legs. Hair annulated black and white, and terminating in long reddish points; muzzle flesh-coloured; sides of nose and circle round the eyes of a light rusty colour; feet black; tip of tail black.

Nearly as large as the *H. vitticollis*. I am indebted to my friend Mr. Casie Chitty, District Judge of Chilaw, for a live specimen of this animal, among several others which he very kindly placed at my disposal.

PARADOXURUS ZEYLANICUS, *var. FUSCUS.*

Beetle brown throughout; no streaks on the back perceptible; fur very glossy; a bright golden yellow subterminal ring to the tail.

Size of the other variety. At first I supposed this to be another species. It was killed at Nuwara Eliya. In every respect, except the colour, it corresponded with the ordinary coloured *P. zeylanicus*.

SOREX MONTANUS, *n. sp., nobis.*

Fur, above soft sooty black, beneath lighter coloured; whiskers, silvery gray, and long; lower part of legs and feet grayish, clothed with dressed hair; toes, five; six tubercles on soles, in pairs; claws short, whitish; ears large, round, naked, outer margin lying on a level with the fur of the head and neck, the ears being thus concealed when seen from behind; tail tetragonal, tapering, shorter than the head and body, covered with short dark brown hair.

and among these are scattered longer silky hairs, of which a few are also seen in the posterior and inferior parts of the body.

A specimen found at Pidurutalágala (8,000 feet) measured as follows :—

Length of head and body	...	3 $\frac{3}{4}$ inches.
Length of tail	...	2 $\frac{1}{4}$ „
Length of hind feet	...	8.12 „

I am indebted to Mr. Montenach, H. M. 15th Regiment, for this and many other interesting animals of Nuwara Eliya. This black shrew is also found in other parts of the Kandyan Provinces.

*SOREX FEROCULUS, n. sp., nobis.*

Fur soft, above bluish black, beneath lighter coloured ; tail black, rounded, tapering ; tip naked, flesh-coloured ; claws white, those of the fore feet elongated, compressed, acute. It is somewhat larger and fuller in the face, but in many other respects this animal resembles the last described. It is a spirited lively animal even in confinement.

*SOREX FERRUGINEUS, n. sp., nobis.*

Fur soft, ferruginous brown, washed with blue, smaller than the *S. montanus* ; feet and legs naked. Large secreting glands on the pubis ; odour very disagreeable. No cetæ or glands could be traced on the two other species, nor had they any of the smell.

I am indebted to Mr. Alexander Gordon, of Dimbula, for a specimen of this small shrew, which he found on a coffee estate.

There are two other larger black shrews than any of those now described, one in the possession of Mr. Thwaites, of Pérádeniya, and the other—with a very powerful musky odour, stronger even than in the *S. murinus*—occasionally seen in the godowns at Kandy, of which further notice hereafter.



MUS KANDIYANUS, *n. sp.*, *nobis*; *Mus Albiventer*, MS.

Fur very soft and silky; above yellow brown, beneath and inside of limbs milky white; hair of back and upper parts lead colour, with yellow and black tips, the latter fewer; whiskers black, very long, a few shorter grayer ones; ears large, ovate, slightly villous; feet grayish-flesh-coloured; claws, white those of the fore feet short; rudimentary thumb clawless; claws of the three middle subequal; hind toes acute and longer, overlapped with gray hairs; soles bald, flesh-coloured; five tubercles to fore and six to hind soles; internal and hinder tubercle of the latter elongated; tail, longer than the head and body, scaly, and covered with short dressed black hair, which are longer towards the extremity; cutting teeth smooth, yellow.

Length of head and body	...	6½	inches.
Length of tail	...	7½	"
Palma	...	5	5-12 "
Planta	...	1	12-12 "

This is one of the common house rats of the Kandyan Provinces. The specimens from Nuwara Eliya are larger, and the fur softer and of a deeper lead colour than those from Kandy, Badulla, or Kurunégala. As there is more than one white-bellied species of rat in the Island, the term *Kandiyanus* has been substituted for *albiventer*.

MUS CEYLONUS, *n. sp.*, *nobis*.

Fur soft, lead colour, that of upper parts tipped with fawn colour; ears large, naked; whiskers black, moderately long; tail brown, scaly, and covered with short adpressed brown hair; feet brown; soles purplish.

Head and body	...	4¾	inches.
Tail	...	5	"

This small rat is found in outhouses in the Cinnamon Gardens, Colombo.

MUS NUWARA, *n. sp., nobis.*

Fur very soft, above of a deep yellow olive brown colour, beneath yellowish gray; hair of the upper part of the head and body of lead colour, with some longer silky black ones, both tipped golden yellow; hair of lower part of a lighter lead colour; tail shorter than the body, tapering, scaly, and covered with adpressed hairs; superior surface brown, and inferior light yellow; feet yellow brown; soles nearly bald, blackish; claws purplish; rudimentary thumb clawless; four tubercles to the soles of the fore feet and four tubercles to the hind soles; incisors yellow, upper ones grooved in the middle.

Length of head and body	...	$3\frac{1}{4}$ inches.
Length of tail	...	$2\frac{1}{4}$ „

This small rat is found in pairs in the black soil of Nuwara Eliya, especially in the potato fields.

MUS COFFÆUS, *n. sp., nobis.*

Fur thick, stiff above yellow, mixed with brown; beneath, yellow gray or tawny; face rough; whiskers short, thin, black, a few gray; hairs of upper parts flattened, ashy gray, and tipped yellow; some thinner and longer ones also tipped yellow, with subterminal black band; under fur soft, and of a light lead colour; ears moderate, subovate, villious, yellow ferruginous; tail round and tapering; upper surface dark brown, lower yellow-gray; cutting teeth yellow; upper incisors grooved, as in the last.

Length of head and body	...	$4\frac{1}{2}$ inches.
Tail	...	4 „

The above description is from dried specimens. This is the rat which is so troublesome to coffee estates in some seasons of the year, when probably from scarcity of their ordinary food they cut and eat the coffee berries and buds. Both this and the *Mus nuwara*, I am inclined to think, are

allied species to *Mus hirsutus* of India, but I have neither specimen nor description of that rat, except the small notice of it in Mr. Walter Elliot's Catalogue, which he has kindly sent me. However, as Mr. Elliot has now a specimen of the coffee rat from me, he will be able to determine the relation.

SCIUROPTERUS LAYARDII, *n. sp., nobis*; *S. Fuscocapillus?*  
Jerdon.

Fur soft, moderately long; upper surface of rufous chestnut colour, beneath gray; hairs of upper surface of body blackish to near the tips, which are of a rufous dark brown colour; under parts of neck and cheek slightly ferruginous; face and head blackish, mixed with gray; whiskers long and black; legs deep brown; feet grayish; membrane brown above and gray beneath, and upper part of the former of a velvety black, with a soft delicate white fringe on the border. Tail flat and broad, lighter chestnut than the body, washed with black.

	ft.	in.
Length of head and body ...	...	1 2
Tail ... ..	...	0 1½

I am indebted to Messrs. Palliser, of Dimbula, for this and many other interesting specimens. This is the first time that a second species of flying squirrel has been noticed in Ceylon. Mr. Blyth, who has examined this specimen, is inclined to think that this is a full-grown specimen of the *S. fuscocapillus* of Jerdon (Jas. B., 1847, page 867), but he could not well decide, as he had no specimen of the latter to compare it with. The description certainly does not in all respects correspond with the characters of the Ceylon animal.

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## DESCRIPTION OF ADDITIONAL MAMMALS.

BY E. F. KELAART, M.D.

PTEROPUS SEMINUDUS, *nobis*.

New species of Frugivorous Bat.

Body slightly covered with light brown fur ; membranous expansion of a darker brown colour ; interfemoral membrane deeply emarginated ; head and body  $5\frac{3}{4}$  inches ; head alone  $1\frac{7}{8}$  inch ; tail  $\frac{3}{4}$  inch ; expanse 1 foot 8 inches.

I am indebted to the Rev. Dr. Macvicar for a specimen of this hitherto undescribed bat, found at Mount Lavinia.

HIPPOSIDEROS LANKADIVA, *nobis*, *n. sp.*

Ceylon Gigantic Horse-shoe Bat.

Ears large, acuminate, and emarginated externally near apex ; transverse striæ on inner surface naked, with the exception of the inner edge ; muzzle short, but face rather prolonged ; body long, covered with soft, dusky, rufous brown fur, which is grayish at the basal termination ; head, neck, and beneath of a lighter brown colour ; pubis hairy ; interfemoral membrane acuminate to tip of tail, which is not exerted ; no frontal sac, but two tubercular points from which grow stiffish hairs.

A full-grown male measured as follows :—

Length of head and body	...	$4\frac{1}{4}$ inches.
"    of tail	...	2   "
"    of forearm	...	2   "
"    of tibia	...	$1\frac{1}{2}$ "
"    of carpus	...	$1\frac{3}{4}$ "
"    of tarsus	...	$0\frac{1}{3}$ "

Ears,  $\frac{5}{8}$  in. broad, and nearly as long. Space between ears,  $\frac{3}{4}$  inch. Weight, 2. oz.  $3\frac{1}{2}$  drs.

This bat is found in great abundance in and about Kandy. I have several fine specimens from the Kurunégala tunnel, which swarms with them. This is the largest of all horse-shoe bats hitherto seen in Ceylon. I have ventured to consider it new, as it is not to be found in Mr. Blythe's Monograph of Indian Bats.

MUS TETRAGONURUS, *nobis*, *n. sp.*

Four-sided Tail Rat.

Fur above fulvous brown, mixed with longer black-tipped lead-coloured hairs, beneath grayish; whiskers long, black; ears moderate, naked; feet brown, hairy; tail longer than the head and body, four-sided, scaly, covered with very short thin adpressed hairs.

Head and body	...	6 $\frac{3}{4}$ inches.
Tail	...	7 $\frac{1}{2}$ „

I have only seen one specimen of this rat from Hēndala, near Colombo, procured by Mr. Gill, to whom I am indebted for some rare animals.

MUS DUBIUS, new species, or a marked variety of

MUS KOK of *Elliot*.

Fur soft, mixed with black and rufous brown; under fur lead colour, beneath grayish, washed with rufous on the sides; whiskers few, moderately long, black, some with gray tips; tail shorter than the head and body, scaly, and covered with short, soft, black hair; feet grayish brown, and middle toes subequal, and rudimentary thumb with a short, broad claw; ears moderate, villose; head and body, 7 $\frac{1}{2}$  inches; head 1 $\frac{3}{4}$  inch; tail 5 $\frac{1}{2}$  inches; length of small intestines 3 ft. 4 in.; large 11 in.; cœcum 2 in.; stomach 3 in.

This is the common outhouse rat of Kandy. It appears to replace the well-known brown rat (*M. decumanus*). The common house rat is the white-bellied variety, *Mus kandianus miki*.

## APPENDIX.

## PROCEEDINGS OF MEETINGS.

## GENERAL MEETING.

*June 9, 1849.*

Major Lushington in the chair.

Read and confirmed Minutes of last Meeting.

The following gentlemen were then proposed, ballotted for, and admitted Members of the Society :—

J. C. Chitty, Esq., proposed by J. Capper, Esq., seconded by Dr. Willisford.

L. de Soyza Mohandiram, proposed by E. C. Caldwell, Esq. (proxy), seconded by J. Capper, Esq.

D. Smith, Esq., proposed by R. E. Lewis, Esq., seconded by J. Steuart, Esq.

*Museum.*

The following donations were then presented to the Society's Museum :—

A case containing 96 specimens of the timbers of Ceylon, with a catalogue of their names, specific gravity, uses, and durability, &amp;c., by A. Mendis, W. S. Mohandiram of Moratuwa.

Master Carpenter, Royal Engineers' Department, ten specimens.

Additions to the same by J. Capper, Esq.

Seeds of the tea plant grown at Pussellawa, by Messrs. Worms.

Barley grown at Nuwara Eliya : specimens in the ear.

Balls of *Scarabeus Socu* (Sacred Beetle of Egypt), E. L. Layard, Esq.

Specimen of black coral, A. Mendis Mohandiram (this splendid specimen is a smooth slender shaft upwards of six feet long, affixed to a stone ; unfortunately the extreme end has been broken off).

Five specimens of the genus *Heliodorus* (Swain), J. E. Middleton, Esq.

Specimen of iron found at Galle in digging a well, by G. Gunewardena, Esq.

A Dutch silver coin, De Perera Mudaliyar.

Read a letter from Mr. Justice Stark expressive of his regret at not being able to attend the Meeting, and forwarding for the inspection of the Members the following coins and a Buddha :—

Two Dutch coins, gold, 1763, silver, 1765 ; one Batavian copper coin, 1644 ; 1 Portuguese silver coin, 1640 ; one Hindu copper

coin; 3 specimens of the *Ridimassa*; one Scotch doit of King Charles' time.

Mr. Layard also exhibited an alabaster Buddha from Siam.

Fifteen copper coins dug up at a temple at Kotté, presented by L. de Soyza, Mohandiram.

### *Library.*

Twelve volumes of the Transactions of the Batavian Society of Arts and Sciences, in Dutch, presented by the Society, with a translated Index of Contents by Rev. J. D. Palm.

Calcutta Review for March, 1849.

Journal of the Bengal Asiatic Society.

The Society's Journal of the Eastern Archipelago.

Journal of the Statistical Society of London.

Journal of the Geological Society of London.

Travels of the Chinese Traveller Fa Hi Han, by the Editor and Translator, Mr. Laidly.

Moved by Edgar L. Layard, Esq., seconded by J. Capper, Esq., "That with a view to facilitate the selection of Papers for publication, a Council should be appointed, and that the matter be referred to the General Committee for their report."—Agreed to.

The following Papers were read:—

On the Monetary System of Ceylon, by James Steuart, Esq.

Analysis of the Coffee Plant, with the Manures best adapted to the same, by Dr. Rudolph Gygax.

Sketch of the Natural History of Ceylon: Part I., Mammalia, by Edgar L. Layard, Esq.

Mr. Caldwell (by proxy) begged to withdraw his Paper.—Allowed.

### GENERAL MEETING.

*December 1, 1849.*

Rev. D. J. Gogerly in the chair.

The Minutes of the preceding Meeting were read and confirmed.

Three recommendations from the Committee were then read, and in pursuance of those recommendations it was resolved:—

1. That the Proceedings of each General Meeting be published as soon as possible after such Meeting, and circulated among the Members.

2. That the Journal be published whenever and as often as sufficient matter be collected.

A letter was then read from E. L. Layard, Esq., laying before the Society some propositions from the Jaffna Members. The

Secretary was requested to communicate with Mr. Layard on the subject, asking for further particulars as to the objects they had in view.

A letter from Mr. Mooyaart was read, offering to co-operate with the Society in the introduction of the cochineal insect into the Island, on condition of the Society's bearing the expenses thereby incurred. It was resolved, that the objects proposed by Mr. Mooyaart did not come within the scope of the Society.

The correspondence with the Bombay Geographical Society was then read.

In reference to one of the Papers subsequently read, on the Tamil System of Natural History, the Secretary was requested to inquire whether the classification of animals given in the Paper is that of the Niganda.

The following gentlemen were ballotted for and elected Members of the Society :—

E. H. Burrows, Esq., proposed by Sir J. E. Tennent (proxy), seconded by J. O'Halloran, Esq.

Robert Davidson, Esq., proposed by E. L. Layard, Esq. (proxy), seconded by J. Capper, Esq.

Dr. Kelaart, proposed by Major Lushington (proxy), seconded by E. C. Caldwell, Esq.

#### *Museum.*

The following donations to the Museum were laid on the table and the thanks of the Society voted to the donors :—

A collection of corals, from J. N. Mooyaart, Esq., Trincomalee.

A collection of corals, from J. E. Middleton, Esq.

A case of shells, from J. Swan, Esq.

A case of birds, from A. O. Brodie, Esq., Puttalam.

Copy of ancient rock inscription, from A. O. Brodie, Esq. Puttalam.

A petrified seed vessel, from W. S. Taylor, Esq., Batticaloa.

Specimen of the wood of the *Ritigaha*, and a bag made of the bark, as used by the Veddás, from E. R. Power, Esq.

Fifty-two specimens of Kandy woods, from E. de Saram, Esq.

Some iron pyrites, from C. Whitehouse, Esq., Jaffna.

An antique stile, from G. Goonewardana, Esq.

#### *Papers.*

The following Papers were read :—

1. On the Tamil System of Natural History, by Simon Casie Chetty, Esq.

2. Catalogue of Books in the Tamil Language, with notes of their contents, by Simon Casie Chitty, Esq.

3. Prison Discipline in Ceylon, by A. G. Green, Esq.

4. On some supposed Footprints in a Rock near Kurunégala, by A. O. Brodie, Esq.



*Library.*

The following additions to the Library were laid on the table, and the thanks of the Society voted to the donors of such as were gifts :—

A Meteorological Diary from Batticotta, July to September, 1849.

A Meteorological Diary from Trincomalee.

Four numbers of the Journal of the Asiatic Society of Bengal, from the Society.

Six volumes of the Transactions of the Geographical Society of Bombay, from the Secretary.

Three numbers of the Journal of the Asiatic Society of Bombay, from the Society

The Calcutta Review for September.

Four numbers of the Journal of the Eastern Archipelago (June to September), from the Editor.

A number of the Journal of the Statistical Society of London.

A number of the Journal of the Geographical Society of London.

Contributions to Knowledge, vol. I., from the Smithsonian Institution of America.

Pilgrimage of Fa Hian.

Orientalists' Guide, from Dr. Willisford.

Pamphlet on Artesian Wells, by Dr. Kelaart.

## GENERAL MEETING.

*February 23, 1850.*

Rev. D. J. Gogerly in the chair.

The Minutes of the preceding Meeting were read and confirmed.

Three recommendations of the Committee were discussed, in accordance with which it was resolved :—

1. That the Committee be authorised to expend in the purchase of two cases the funds necessary for that purpose.

2. That the Society, fully concurring in the expediency of taking steps towards securing to themselves the use of the entire room which they occupy, do leave the Committee to choose a fitting opportunity for moving in the matter.

3. That the Society, deeply interested in all that relates to the industry of the Island, undertakes to procure and forward to England such objects as may appear suitable for the exhibition of the works of industry of all nations, to be held in 1851, and that the Committee of Management do at once proceed to take steps for this purpose.

The following gentlemen were then ballotted for, and elected Members of the Society:—

The Hon. J. Cauldfield, Esq., proposed by A. O. Brodie, Esq., seconded by J. Capper, Esq.

F. Straube, Esq., proposed by J. Capper, Esq., seconded by E. C. Caldwell, Esq.

—Flanderka, Esq., proposed by J. N. Mooyaart, Esq. (proxy), seconded by E. L. Layard, Esq. (proxy).

Rev. J. Katts, proposed by Rev. E. Muttukistna, seconded by J. Capper, Esq.

G. H. K. Thwaites, Esq., proposed by R. E. Lewis, Esq., seconded by J. E. Middleton, Esq.

H. P. Muttukistna, Esq., proposed by Rev. E. Muttukistna, seconded by Rev. J. Ondaatjie.

J. Dalziel, Esq. (re-admission), proposed by Dr. Misso, seconded by J. Capper, Esq.

#### *Museum.*

The following donations to the Society's Museum were then laid on the table, and the thanks of the Society voted to the donors:—

A wild cat, stuffed large horned owl, 33 specimens of wood, presented by Mr. C. D. Alwis, a student of the Academy.

Specimens of Batticaloa cloth, four specimens of Bourbon and native cotton grown at Batticaloa.

Four specimens of cocoanut sugar, specimens of cleaning nuts, J. G. and W. S. Taylor, Esq.

Four specimens of coral, eight specimens of fossils, forty birds, sixty land shells, specimens of dye stuff, two monkeys, bones of the dorsal fin of a chetadon, E. L. Layard, Esq.

Skull of a boar, skull of a *Sciurus Bordieu*, J. Davidson, Esq.

Fifty-seven specimens of wood, S. C. Chitty, Esq.

Six coins, W. S. Gunaratna, Esq.

Several specimens of natural history and geology, Dr. Kelaart.

Specimens of sponges, J. N. Mooyaart, Esq.

Specimens of sponges, J. E. Middleton, Esq.

Seven flying lizards, J. de Alwis, Esq.

A box of shells, T. Morgan, Esq., Galle.

Case of butterflies, J. P. Green, Esq.

*Library.*

The following additions to the Library were also laid on the table :—

Bennet's Ceylon, presented by D. Smith, Esq.

A number of the Journal of the Statistical Society of London.

A number of the Journal of the Geological Society of London.

A number of the Calcutta Review.

Meteorological Diary for Batticotta.

Meteorological Diary for Trincomalee.

*Papers.*

The following Papers were read :—

Notice of the Geological Formation of Nuwara Eliya, by Dr. Kelaart.

Notice of the Manufacture of Sugar from the Sap of the Coconut, by Messrs. J. G. and W. S. Taylor.

On the Eḷu Language, its Poets and its Poetry, by J. de Alwis, Esq.

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SPECIAL GENERAL MEETING.

March 23, 1850.

Rev. D. J. Gogerly in the chair.

The objects of the Meeting were explained by the Chairman, viz., to receive a Paper by Lieut. Henderson on some supposed footprints discerned in a rock near Kurunégala, and other general business.

Lieut. Henderson's Paper was then read by the Secretary, and proposed for publication in the ensuing number of the Journal, with another from A. O. Brodie, Esq., of Puttalam, on the same subject, but written in contravention of the former gentleman's view. With regard to the Paper now before the Society, it was objected that having been already submitted to the Geological Society of London, it could not now be received into this Journal. On the other hand, it appeared to all manifestly unfair towards Lieut. Henderson to publish Mr. Brodie's Paper without his, and it was further suggested that it would be more advisable to wait for a reply, which Mr. Henderson had promised to Mr. Brodie's strictures on his views. A long discussion ensued, during which, in addition to the geological question at issue between the writers, much of a very interesting nature was elicited from the native gentlemen present, on the existence of similar rocks in other parts of the Island, and the native legends regarding the nature and origin of the marks on them. It was finally determined that the Society should not be hasty in giving their sanction to views which were at least entirely new in the annals of geology, and that the publication of both Papers be deferred for the present.

It appeared at the same time that other bodies at a distance had a right to expect from them as a local Society to institute a full and searching investigation into all the circumstances connected with a question of so great scientific importance, and the Committee were accordingly requested to take the matter into their special consideration, to invite communications from the native gentlemen and others on the subject, and, if possible, to make a local examination of the rock at Kurunégala, to procure specimens from it for the Museum, and to report on their proceedings to the Society.

The Treasurer having reported a want of some instruments required to complete the Meteorological Registers furnished to them from outstations, it was resolved that a sum not exceeding £5 be placed at the disposal of the Committee for the purchase of them.

C. P. Layard, Esq., was proposed by J. O'Halloran, Esq., seconded by Dr. Willisford, and unanimously elected a Member of the Society.

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The Special General Meeting then resolved itself into the

#### ANNIVERSARY MEETING,

The Rev. D. J. Gogerly retaining the chair.

The Report of the Committee of Management for the past year was then read by the Secretary.

#### *Report.*

In taking a retrospect of the labours of the Society during the past year, your Committee regard with satisfaction the progress which it has made within that period; and they look with the strongest confidence to the future, when they reflect that the same steady advances have attended it throughout the whole of its career, unabated even during the season of unexampled depression and distress which not long since pervaded the whole of the civilised world.

Since the last Anniversary Meeting 20 new Members have been admitted, and one Member re-admitted on his return from England, while the zeal and activity evinced by the Members at outstations, who have poured in contributions so largely to the Society's Museum that your Committee have been called on three times to extend the accommodation at its disposal for their reception.

Large contributions have also been made by persons wholly unconnected with the Society; nor can your Committee fail to recognise in this circumstance an earnest of the interest which a portion at least of the public take in its proceedings. A list of the contributions will be found appended.

But your Committee desire not to take leave of this subject without recording their sense of the inconvenience and disadvantage under which the Society labours, especially in regard to its Museum, by having to share with the Loan Board the room originally devoted to its use by the Government.

They have further to report the non-arrival of the Taxidermist whom they expected from Calcutta; nor can they assign any reason for his withdrawing from the engagement which the Society was willing to make with him. Your Committee have long since given up all expectation of him, and would probably find no difficulty in getting his place supplied; but as many of the circumstances are now changed which would have rendered his services desirable, your Committee reserve for future consideration whether they shall recommend this course to be adopted.

As a token of the prosperity of the Society and of the position which it begins to assume among its contemporaries, your Committee refer to the number and character of the learned bodies with which it at present corresponds. Besides those with which it was in communication at the beginning of the year, its co-operation has been sought by the Smithsonian Institution of America, under the immediate direction of the United States Government; the Geological Society of Bombay; the Antiquarian Society; and the Syro-Phœnician Society of London; while from itself has emanated a correspondence with the Asiatic Society of Paris. It would not be fair to pass by the circumstance that an assembly of the Members at and about Jaffna has recently been brought about by the energetic perseverance of your late Secretary, Mr. Edgar Layard, for the purpose of promoting the interests and furthering the views of the Society.

The Treasurer's accounts, too, show a larger balance than at the close of any previous year; and thus, notwithstanding that the whole expense of publication has for some time past devolved on the Society, and that considerable expenses have been incurred in the purchase of cases and almirahs to furnish the Society's Museum, your Treasurer reports a balance in hand:—

	£	s.	d.
On account of the General Funds of the Society of...	20	14	0½
On account of the Museum Fund of ...	..	28	0 10
	<hr/>		
Total ...	48	14	10½
	<hr/>		

To that, whether regard be had to the external relations of the Society, its internal economy, or the number and activity of its Members, your Committee deem that it has now reached a position and a stability to which it never yet approached at any previous period of its existence.

Your Committee do not, however, recommend any relaxation of the strict economy which has hitherto regulated their expenditure. The time, in their opinion, has not yet come when the Society can dispense with the smallest share of caution or prudence in the disposal of its funds.

With regard to the business which has come before the Society during the year, your Committee have to report the arrival of the meteorological instruments which were ordered before the last Anniversary Meeting. These have now been set up some time in convenient places, and your Librarian lays before the Society the result of observations made by himself in Colombo since August last, with two meteorological registers for the year from Batticotta and Trincomalee.

Your Committee desire further to direct attention to their measures lately introduced for the better regulation of the Society's Publications. It was found that much delay was the inevitable result of the old plan, and that many Members, especially those at outstations, had no means of arriving at a knowledge of the subjects laid before the Society until all interest in them had ceased. It has been, in consequence, determined :—

1. That the Proceedings of each General Meeting be published as soon as possible after such Meeting, and a copy of these Proceedings be sent to each of the outstation Members.

2. That the selection of Papers for the Journal be entrusted to a Council appointed by the Society for that purpose.

3. That instead of being confined to a yearly issue, a number of the Journal be published whenever and as soon as sufficient matter is collected.

Considerable advantages seem already to have accrued from the first two regulations, which came into effect immediately, and your Committee think they can trace to your operation a portion of the increased energy on the part of the outstation Members alluded to in a former part of the Report. Your Committee count on similar results from the third, but as it will not begin to take effect till after the publication of the ensuing number, they cannot speak from experience.

The Papers which have come before the Society have been of a very interesting nature. Mr. Layard's Papers on Natural History derive considerable value from the fact that specimens of many of the animals described have been forwarded to Calcutta, and there carefully compared with those in the extensive Museum of the East India Company, by the learned Curator of that Institution.

Lieutenant Henderson's and Mr. Brodie's Papers on the marks in a rock at Kurunégala are of great geological interest, and similar marks are said to be found in other parts of the Island. Some notes

on the Geology of Nuwara Eliya, by Dr. Kelaart, will perhaps prove of higher interest, as they treat of a formation which now engages the attention of Indian geologists.

Connected with ancient Oriental literature and history, a very able sketch has been laid before the Society by Mr. Alwis, on the Elu or ancient Singhalese poetry. A valuable catalogue of books in the Tamil language, and a sketch of the Tamil systems of the Natural History, have been presented by Mr. Casie Chitty, and some interesting notes by Dr. Macvicar on the Gaysabháwa or village councils of the Singhalese. With regard to this last Paper, your Committee regret that insuperable obstacles are raised against its publication by the author; and your Committee deem they would scarce do justice to it did they attempt to give an outline of its contents. Your Committee have also to acknowledge while on this subject the receipt of another rock inscription taken by Mr. Brodie from the celebrated Vibárá at Mihintale.

The other Papers presented to the Society concern the industrial economy and the resources of the Island at the present day. Under this head your Committee have to enumerate a Catalogue of Woods, the growth of the Island, by John Capper, Esq.; on the Coffee Plant and its appropriate Manure, by Dr. Gyax; on the Manufacture of Sugar from the Sap of the Cöcoanut Tree, by the Messrs. Taylor of Batticaloa.

But the most important topic, and the last, which has engaged the attention of the Society, is a project for forming and sending to England a collection of objects calculated to represent the industry of Ceylon in the great exposition of the works of industry of all nations, to be held in 1851.

In this your Committee can report but little progress, as the project has engaged the attention of the Society for only a short time. But their views have already been laid before the Government, and they have to acknowledge the promptness and liberality with which they have been met.

The circular now laid on the table details the objects your Committee have in view. It is already printed at the expense of Government in the Singhalese, Tamil, and English languages, and circulated under their auspices to the Government Agents and headmen of the Island. Your Committee have further to acknowledge a promise of the most ample pecuniary and other assistance from His Excellency the Governor in carrying out the scheme. They would, in conclusion, commend it to the best consideration of the Society and its individual Members. They trust that no efforts will be wanting on their part towards carrying out to the fullest what is already so auspiciously begun, and hope that the present opportunity may not be lost for extending the influence of the Society, and making widely known the interest which they take in all that concerns the public good.

Resolved, that the Report as now read be adopted.

The Treasurer then laid on the table his accounts for the past year, and it was resolved that they be received and passed.

A list of the books added to the Library was then laid on the table.

The following Members were then proposed, and duly elected as office-bearers of the Society for 1850 :—

*Patron.*

His Excellency the Right Honourable the Governor.

*Vice-Patrons.*

The Right Rev. the Bishop of Colombo ; Sir A. Oliphant ;  
and Mr. Justice Stark.

*President.*

The Honourable C. J. MacCarthy, Esq.

*Vice-President.*

The Honourable J. Cauldfield, Esq.

*Librarian.*

R. E. Lewis, Esq.

*Treasurer.*

J. O'Halloran, Esq.

*Secretary.*

J. Capper, Esq.

*Committee.*

The Rev. J. G. Macvicar, D.D.; the Rev. D. J. Gogerly ;  
the Rev. G. A. Muttukistna ; Major Lushington, C.B. ; F. W.  
Willisford, Esq., M.D. ; J. B. Misso, Esq. ; James de Alwis, Esq. ;  
James Swan, Esq. ; E. H. Burrows, Esq.

*Sub-Committee for Works of Industry.*

F. W. Willisford, Esq., M.D. ; J. Capper, Esq. ; J. O'Halloran,  
Esq. ; A. de Alwis, Esq.

A vote of thanks was then passed to the Secretary of the past year for the Report which he had drawn up, and to the Chairman for his able and efficient discharge of the duties of Vice-President of the Society, and for his conduct in the chair on the present occasion. The Meeting then broke up.

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GENERAL MEETING.

June 22, 1850.

Rev. Dr. Macvicar in the chair.

The Minutes of the last Meeting were read and confirmed.

The Secretary read a communication from Mr. J. Mooyaart of Trincomalee, suggesting certain alterations in the Rules of the



Society, with a view of affording encouragement and co-operation to native associations at outstations. After some discussion, in which it was shown that new Rules could not be proposed except at the Anniversary Meeting, it was resolved that the matter be left for the consideration of the Committee.

The following letter was then read from Mr. Thwaites of Pérádeniya, describing the nature of a vegetable substance received by the Society from Mr. Edgar Layard of Point Pedro :—


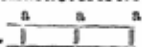
Royal Botanical Gardens, Pérádeniya,

June 13, 1850.

MY DEAR SIR,—Directly I took into my hands the cotton-like substance contained in your letter, and before I put it under the microscope, I suspected it to be a species of *Conferva* (or fresh-water *Alga*), and such it proves unquestionably to be. It is a species of *Tiresias* of Bory (*Vesiculifera*, Hassall).

In England it is no uncommon thing to find, after the subsidence of floods, large quantities of what is called “vegetable flannel” left upon fields which have been covered by the water; and the “vegetable flannel” I have always found to consist of one or more species of *Conferva* matted together. The origin of this substance has been a puzzle to many a naturalist, but is nevertheless easily explained, and thus :—

Previously to the fall of rain, every stagnant pool and ditch has contained an abundance of these minute plants, which grow floating without any attachment to the bottom or sides; when these pools, therefore, become overfilled, the *Conferva* are floated out, carried away by the descending streams to the lower grounds, and there left as the waters subside.

The structure of these plants, as shown by the microscope, is very simple: the whole plant consisting frequently of a single row of similar cylindrical cells placed end to end:  When in a growing state each cell has a small quantity of green colouring matter, or “endochrome,” within it, differently arranged in the different genera, and which almost disappears when the plant is dead and dry; and I should have been unable to identify the genus to which the plant you have sent belongs but for certain ring-like markings (a) upon the end of some of the cells, and which are characteristic of the genus *Tiresias* in one of its states of growth. 

I am, &c.,

G. H. K. THWAITES.

JOHN CAPPER, Esq.,  
Secretary, Royal Asiatic Society.

A letter was next read from Mr. S. C. Chitty, accompanying several inscriptions taken from stones near Puttalam, &c.

Chilaw, May 12, 1850.

SIR,—I have the pleasure of transmitting to the Society a copy of an inscription taken from a stone slab, which is placed upright in the ground, at the head of the grave of a Muhammadan saint at Piramanenkandel, a deserted village situated to the eastward of the Mí-oya, about ten miles from Puttalam in a north-east direction. You will observe that the characters of this inscription are not Arabic, but an ancient and obsolete form of Páli, and I am therefore inclined to believe that it records some event connected with the history of Buddhism in Ceylon, and has no reference to the Muhammadan saint.

The ruins of Tammana-nuwara, of which I have published an account in volume VI. of the Journal of the Royal Asiatic Society, are not very far from Piramanenkandel, and it is likely that the stone slab was removed by the Moors from those ruins and placed in its present situation.

I avail myself of this opportunity to send to the Society a copy of another inscription engraved on a flat stone (4 feet long, 1 foot and 5 inches broad, and 5 inches thick), which the inhabitants of Dummaladeniya have removed from a neighbouring jungle, and fixed on the side of the high road leading from Chilaw to Kaimal through their village, as a boundary stone. The inscription in question is in ancient Grantha character, and it covers all the four sides of the stone, but on one side alone it is legible.

I have the honour, &c.,

SIMON CASIE CHITTY.

To the Secretary of the Ceylon Branch,  
Royal Asiatic Society, Colombo.

The Secretary then read a Report from the "Exhibition Committee," dated the 20th instant:—

*First Report of the Committee appointed at the Anniversary Meeting of the Asiatic Society of Ceylon, on March 23, 1850, to promote the objects of the Industrial Exhibition of 1851.*

Your Committee, impressed with the great importance of the object for which it was appointed, and fully sensible of the necessity for obtaining the best information upon which to proceed, lost no time in seeking the assistance of the various Government Agents, which was done under the sanction of His Excellency the Governor. The returns requested from these sources have not as yet been received. Your Committee, aware of the obstacles invariably met with in collecting data in this country, are still in hopes of obtaining the information sought at an early period.

By means of circulars freely distributed, in Sinhalese and Tamil as well as in English, the inhabitants of this Colony have, it is believed, been fully apprised of the nature and objects of the great Industrial Exhibition to assist in promoting which this Committee was appointed; and though in some few cases misapprehensions are said to have existed amongst the least informed Sinhalese, who appear to have looked upon the collection of information regarding works of industry as a step towards new Fiscal regulations, the proper intention of the exhibition is believed to be entirely appreciated by the great bulk of intelligent natives.

With a view of affording encouragement to native talent, and at the same time to impart, as much as possible, a local character to such objects of art as may be sent from the Island, premiums have been offered for designs for carvings and ornamental works of Ceylon artists, and embodying Ceylon objects. Although a limited number only of these have been received, your Committee trusts that by the selections which have been made from them the intention will have been at least partially realised.

Communications have been received from Her Majesty's Commissioners of the Industrial Exhibition of 1851, through the local Government, to which your Committee have replied. The principal points contained in the printed circulars of the Commissioners have been embodied in a paper circulated through the Colony for general information, a copy of which accompanies this Report, together with a classified, though imperfect, list of objects to be forwarded from Ceylon to the Exhibition. Consequent upon the distribution of the catalogue, much new and valuable information has been received by your Committee, especially in reference to the vegetable productions of this Island. Amongst those who have voluntarily tendered their assistance may be named Mr. J. B. Misso, Mr. W. Ondaatjie of Puttalam, and Mr. T. A. Pieres of Kandy.

It would be premature at this moment to enter into details of such works as are in course of execution upon orders, or of those which have been presented by various contributors in their own names. Your Committee, however, indulge in the hope that within two months from this date there will be formed a considerable collection of interesting articles ready for shipment by sea, which it would be desirable to exhibit in Colombo previous to their being despatched to Europe.

Not the least interesting portion of the collection will be the medicinal substances, gums, resins, and oils, most of which are as yet little if at all known to Europeans. In fibrous materials experiments are being made, the results of which it is hoped may prove of practical utility and value. In manufactured articles Ceylon can scarcely hope to approach the many more highly favoured countries of the Indian continent; such, however,

as exist in this Island will be sent, in the hope that they may prove of interest, though not perhaps on account of their costly fabric or rarity of design.

Your Committee cannot conclude this brief report without noticing the ready liberality of His Excellency the Governor, who has undertaken to defray out of the Colonial Treasury the whole expense attending the collection of such objects as Ceylon can produce adapted to the Exhibition of 1851.

JOHN CAPPER,  
Secretary of Committee.

Colombo, *June 20, 1850.*

The following gentlemen were then balloted for, and declared duly elected Members of the Society :—

S. Amblawanan, Esq., of Kayts, proposed by E. L. Layard, Esq., seconded by H. Pole, Esq.

The Rev. J. Robinson, of Batticaloa, proposed by E. L. Layard, Esq., seconded by W. Twynam, Esq.

T. A. Pieres, Esq., of Kandy, proposed by Dr. Kelaart, seconded by J. B. Misso, Esq.

C. P. Marcus, Esq., of Kurunégala, proposed by Dr. Kelaart, seconded by Dr. Stuart.

The following donations, &c., were laid on the table :—

*Museum.*

Specimen of vegetable flannel from E. L. Layard, Esq.

Two earthen coins (?) from N. S. Guneratna, Esq., of Mátalé.

A collection of specimens illustrative of the geology of Nuwara Eliya, from E. F. Kelaart, Esq., M.D.

*Antiquities.*

A plan of the ruins of Pollanuware from J. N. Mooyaart, Esq.

Two inscriptions from stone slabs in the neighbourhood of Puttalam, and a stone inscription from a slab in the Island of Jaffna, from S. C. Chitty, Esq.

*Library.*

Royles' Productive Resources of India.

The Calcutta Review for March.

Journal of Eastern Archipelago, December to February.

Journal of Bengal Royal Asiatic Society, August and September.

Journal of Statistical Society of London, March.

Journal of Geological Society of London, May.

Meteorological Register of Colombo, March to May.

Meteorological Register of Batticotta, March and April.

Meteorological Register of Trincomalee, March and April.

*Papers.*

The following Papers were then laid on the table and read :—

Sketches on the Natural History of Ceylon : Part III., by Edgar E. Layard, Esq.

A short account of the Veddás of Bintenne, by the Rev. J. Gillings.

The Geology and Fauna of Nuwara Eliya and Horton Plains, by E. F. Kelaart, Esq., M.D., F.L.S.

The Zoology of the Tamils : Part II., by S. C. Chitty, Esq.

Sermons by Buddha, by the Rev. D. J. Gogerly.

The Materia Medica of the Siphalese, by T. A. Pieres, Esq.

The Mammals of Ceylon, by E. F. Kelaart, Esq., M.D., F.L.S.

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GENERAL MEETING.

*August 13, 1850.*

Rev. D. J. Gogerly in the chair.

The Minutes of the last Meeting were read and confirmed.

The Secretary notified the arrival by overland of the meteorological instruments ordered from England. Sets of these were agreed to be sent to Captain Higgs at Trincomalee and G. H. K. Thwaites, Esq., at Péradeniya, which, with the observations at Batticotta and Colombo, would make the registry of observations complete.

The following gentlemen were unanimously elected Members of the Society :—

W. Herft, Esq., proposed by J. N. Mooyaart, Esq., seconded by J. Capper, Esq.

C. A. Lorensz, Esq., proposed by J. de Alwis, Esq., seconded by R. E. Lewis, Esq.

Mr. Capper having signified his intention to leave the Colony at an early date, begged to be relieved of the duties of Secretary. It was proposed by J. de Alwis, Esq., and agreed to, that R. E. Lewis, Esq., be requested to assume the duties of the office, temporarily.

The following books were laid on the table :—

*Library.*

Meteorological Register for Batticotta and Trincomalee for June and July.

Translation of the Sidatsangaráva, or Siphalese Grammar, by J. de Alwis, Esq., from the Author.

The Journal of the Statistical Society of London.

The Journal of the Geological Society of London.

British Moths and Butterflies, 2 vols.

*Papers.*

The following Papers were then read :—

On the Sinhalese Language, by J. de Alwis, Esq.

The Statistics of the Puttalam and Chilaw Districts, by A. O. Brodie, Esq.

The business of the Meeting having terminated, it was resolved that this Meeting, having a due sense of the indefatigable zeal of Mr. Capper as the Secretary of the Society, regret that his departure from the Colony obliges them to accept his resignation. The Meeting desire Mr. Capper to accept their best thanks for his efforts in furthering the objects of the Society.

The Meeting then adjourned.

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## ABSTRACT OF A METEOROLOGICAL REGISTER KEPT AT BATTICOTTA, NORTHERN PROVINCE, IN 1849.

1849.	THERMO-METER.		WET BULB THER-MOMETER.			BAROMETER CORRECTED.		AMOUNT OF RAIN.	COURSE OF WIND.	STRENGTH OF WIND.	CLOUDS, &c.
	Mini-mum.	Maxi-mum.	A. M. h. m. 9.30.	A. M. h. 12.	P. M. h. m. 3.40.	Maxi-mum.	Mini-mum.				
January ...	76.5	82.0	5.6	7.0	6.9	29.937	29.889	0.39	N. E. & N. N. E.	2.4	Clear, with flying clouds <sup>1</sup>
February ...	77.7	83.6	5.8	.0	8.4	29.981	29.913	0.00	N. E. & S. E.	2.4	Mostly clear sky <sup>2</sup>
March ...	79.1	85.8	5.3	6.1	6.9	29.959	29.834	0.00	Variable	2.5	Generally flying clouds <sup>3</sup>
April ...	82.2	88.6	5.1	6.3	6.5	29.850	29.757	0.76	S. E. & S. W. to N. W.	2.5	Flying clouds <sup>4</sup>
May ...	82.7	88.8	5.2	6.5	5.8	29.773	29.682	0.57	S. W. to W. S. W.	3.5	Generally cloudy <sup>5</sup>
June ...	81.9	87.3	6.1	7.3	6.7	29.799	29.708	0.56	S. W. & S. S. W.	2.6	Flying clouds <sup>6</sup>
July ...	80.2	86.2	4.6	6.0	5.6	29.794	29.707	0.05	W. S. W. & S. W.	1.5	Generally cloudy <sup>7</sup>
August ...	80.6	86.4	4.5	6.3	6.1	29.810	29.725	0.45	W. S. W. & S. W.	3.6	do. <sup>8</sup>
September	80.8	86.3	5.3	7.7	6.5	29.816	29.706	0.68	S. W.	2.4	Usually clear sky with light clouds <sup>9</sup>
October ...	80.3	85.4	4.0	5.0	5.4	29.895	29.788	3.57	S. W. & W. by S. W.	2.4	Cloudy and hazy <sup>10</sup>
November	78.4	82.4	2.8	3.4	3.4	29.924	29.829	25.73	S. N. N. W., & N. E.	1.3	Heavy, cloudy sky <sup>11</sup>
December	76.1	80.2	2.4	3.2	3.3	29.927	29.837	10.17	N. E. & N. W.	2.5	Generally flying clouds <sup>12</sup>

GENERAL REMARKS.—<sup>1</sup> Generally dew ; showers at night on 2nd, 4th, 10th, 24th, and 31st. <sup>2</sup> Light dew ; very fair. <sup>3</sup> Hazy, with occasional dew ; some rain and thunder throughout the month. <sup>4</sup> Hazy at times, with occasional light rain and thunder. <sup>5</sup> Hazy throughout the month, with little thunder and one or two light showers. <sup>6</sup> Occasional haze ; fair usually. <sup>7</sup> Hazy at times, with thunder and little rain. <sup>8</sup> Hazy at times, with occasional thunder and light rain. <sup>9</sup> Fair, with one or two light showers and one squall of wind. <sup>10</sup> Eight rainy days, with frequent thunder. <sup>11</sup> Twenty-one days of rain. Maximum rain in 24 hours, 4.16 in. ; minimum ditto, 0.02 in. <sup>12</sup> Fourteen days showery ; dew in morning.

DR. The Royal Asiatic Society of Ceylon, in account with the Treasurer.

CR.

1850.

To amount paid for books, London and Calcutta ...  
 Do. for printing Society's Journal, 150 copies ...  
 Do. for printing Notices, &c. ...  
 Do. for Advertisements ...  
 Do. for Stationery, &c. ...  
 Do. for Book-case and Table ...  
 Cover ...  
 Do. for Stand for Meteorological Instruments ...  
 Do. for Duty, &c., on ditto ...  
 Do. for Postages, India and Europe ...  
 Do. for Carriage of Parcels ...  
 Do. for Binding Books ...

£.	s.	d.
20	7	7
24	0	0
3	15	6
1	18	11
0	9	5
7	8	0
0	14	0
0	13	10
1	4	6
1	19	8½
1	5	0
63	16	5½
20	14	0½
84	10	6

Balance ...  
 Total ...

1850.

By balance from last year ...  
 By Annual Subscriptions ...  
 By Entrance Fees ...  
 By sale of Society's Journals ...

£.	s.	d.
...	16	0 6
...	52	10 0
...	14	14 0
...	1	6 0
Total	...	84 10 6

Arrears of Entrance Fees, 1848 ... 1 1 0  
 Do. do. 1849... 1 11 6  
 Do. of Subscriptions for 1850... 18 18 0

£21 10 6

Colombo, February 28, 1850.

E. & O. E.

JOHN CAPPER,  
 Treasurer.

Colombo, February 28, 1850.

E. &amp; O. E.

JOHN CAPPER,  
Treasurer.





## LIST OF MEMBERS

OF THE CEYLON BRANCH OF THE ROYAL ASIATIC SOCIETY.

---

Alwis, Rev. C.	...	...	Colombo
Alwis, J. de	...	...	do.
Armitage, John	...	...	do.
Bessell, H.	...	...	do.
Birch, Woodford	...	...	Kurunégala
Bishop of Colombo, The Right Rev.	...	...	Colombo
Boake, Rev. B.	...	...	do.
Bowker, John	...	...	do.
Brodie, A. O.	...	...	Puttalam
Burrows, E. H.	...	...	Colombo
Caldwell, E. C.	...	...	do.
Capper, John	...	...	do.
Cauldfield, Hon. J.	...	...	do.
Chitty, John C.	...	...	Wéweldeniya
Chitty, Simon C.	...	...	Chilaw
Crawford, Hugh	...	...	Travancore
Dalziel, J.	...	...	Colombo
Davidson, R.	...	...	Jaffna
Dawson, Rev. C. C.	...	...	Mátara
Dawson, Robert	...	...	Colombo
Dickson, Rev. W.	...	...	Mátara
Flanderka, —	...	...	Mullaittivu
Gogerly, Rev. D. J.	...	...	Colombo
Grace, A.	...	...	Galle
Gunawardena, G.	...	...	do.
Gygas, Dr. G.	...	...	do.
Herft, W.	...	...	Maduwelle- tenne
Katts, Rev. J.	...	...	Colombo
Kelaart, E. F., M.D.	...	...	Trincomalee
Kessen, The Rev. Dr.	...	...	Galle
Layard, C. P.	...	...	Colombo
Layard, E. L.	...	...	Point Pedro
Layard, F.	...	...	Kandy
Lewis, R. E.	...	...	Colombo
Livera, F. de	...	...	Mátara
Lorensz, C. A.	...	...	Colombo
Lushington, Major	...	...	Mátara

MacCarthy, Hon. C. J.	...	... Colombo
Macvicar, The Rev. Dr.	...	... do.
Marcus, C. A.	...	... Kurunégala
Margesson, H. D., R.A.	...	... Colombo
Middleton, J. E.	...	... do.
Misso, Dr. J. B.	...	... do.
Mooyaart, J. N.	...	... Galle
Murdoch, John	...	... Kandy
Muttukistna, Rev. G. R.	...	... Colombo
Muttukistna, J. N.	...	... Jaffna
Nelson, J. B.	...	... Colombo
O'Halloran, J.	...	... do.
Oliphant, Sir A.	...	... do.
Ondaatjie, J. M.	...	... Má tara
Palm, Rev. J. D.	...	... Colombo
Percival, Rev. P.	...	... Jaffna
Perera, H.	...	... Má tara
Pole, H.	...	... Jaffna
Selby, Hon. H. C.	...	... Colombo
Sellery, H., C.R.R.	...	... do.
Shand, C.	...	... do.
Smith, D.	...	... Kaderana
Smith, James	...	... Colombo
Soyse, L. de	...	... do.
Straube, F.	...	... do.
Staples, H. J.	...	... do.
Stark, The Hon. Justice	...	... do.
Steuart, Dr., C.R.R.	...	... do.
Steuart, George	...	... do.
Steuart, James	...	... do.
Swamanaden, Edriemanesinga	...	... do.
Swan, J.	...	... do.
Tennent, Sir James Emerson	...	... do.
Thwaites, G. H. K.	...	... Pérádeniya
Twynam, W.	...	... Jaffna
Whitehouse, E. S.	...	... do.
Williams, J. E., R.A.	...	... do.
Willisford, F., M.D.	...	... do.
Worms, G.	...	... Pusselláwa
Worms, M.	...	... do.

## OFFICERS OF THE SOCIETY.

---

*Patron :*

His Excellency Sir George Anderson, c.b.

*Vice-Patrons :*

The Hon. Sir A. Oliphant, c.b., Chief Justice ; the Right Rev. James Chapman, d.d., Bishop of Colombo.

*President :*

The Hon. C. J. MacCarthy, Esq.

*Vice-President :*

The Hon. J. Caulfield, Esq.

*General Committee :*

The Rev. J. G. Macvicar, d.d. ; the Rev. D. J. Gogerly ; the Rev. G. R. Muttukistna ; Major Lushington, c.b. ; F. W. Willisford, Esq., m.d. ; J. B. Misso, Esq. ; James de Alwis, Esq. ; James Swan, Esq. ; E. H. Burrows, Esq.

*Treasurer :*

J. O'Halloran, Esq.

*Secretary and Librarian :*

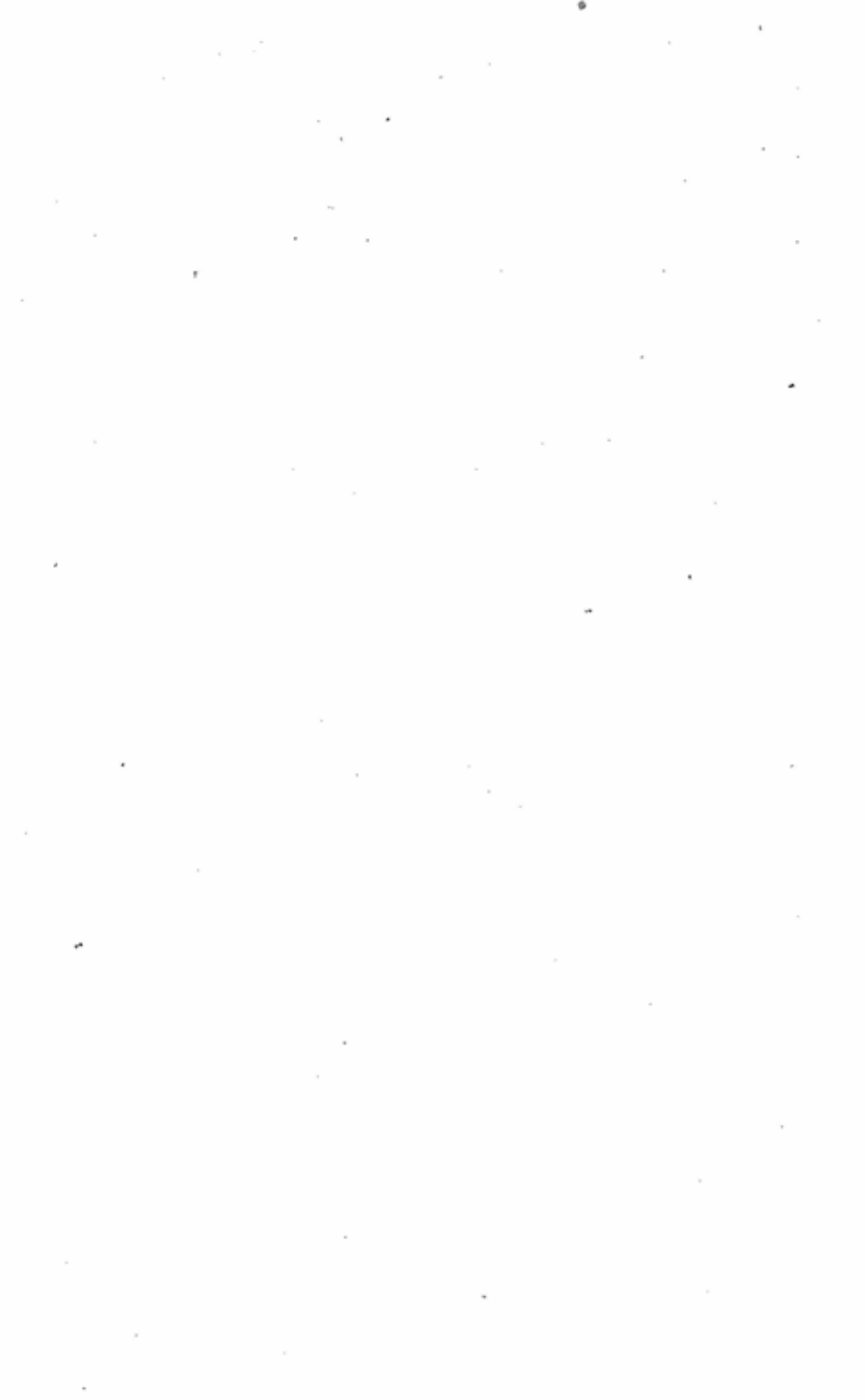
R. E. Lewis, Esq.

## LIST OF BOOKS, PAMPHLETS, &amp;c.,

PRESENTED TO AND PURCHASED BY THE SOCIETY DURING  
THE YEAR 1849.

Transactions of the Batavian Society.  
Travels of Fa Hi Han.  
Narrative of a Mission to Ceylon and India.  
Essay on the Human Mind.  
Natural History of Fishes.  
Pamphlet on Russian Coins.  
Blue Book of Ceylon.  
Swainson's Birds and Taxidermy.  
Smithsonian Contributions to Knowledge.  
Orientalist's Guide.  
Pamphlet on Artesian Wells.  
Annals of India.  
Bennett's Ceylon.  
Royles' Productive Resources of India.  
British Moths and Butterflies.  
The Calcutta Review.  
Journal of the Royal Asiatic Society.  
Journal of the Eastern Archipelago.  
Journal of the Statistical Society of London.  
Journal of the Royal Asiatic Society of London.  
Journal of the Geological Society of London.  
Transactions of the Statistical Society.  
Transactions of The Geographical Society of Bombay.  
Journal of the Asiatic Society of Bombay.







*"A book that is shut is but a block"*

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